

James Watson. —





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J. Smith sculp.

*Institute of the Abbey Church of Clugny.*

London: Published by J. Taylor High Holborn Feb 1 1823.

AN  
HISTORY  
OF THE  
ORIGIN AND ESTABLISHMENT  
OF  
GOTHIC ARCHITECTURE;  
COMPREHENDING ALSO  
AN ACCOUNT, FROM HIS OWN WRITINGS,  
OF  
CÆSAR CÆSARIANUS,  
THE FIRST PROFESSED COMMENTATOR ON VITRUVIUS, AND OF HIS  
TRANSLATION OF THAT AUTHOR;  
AN INVESTIGATION OF THE PRINCIPLES AND PROPORTIONS  
OF  
THAT STYLE OF ARCHITECTURE CALLED  
*THE GOTHIC*;  
AND  
AN INQUIRY INTO THE MODE OF  
PAINTING UPON AND STAINING GLASS,  
As practised in the ecclesiastical Structures of the middle Ages,

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BY JOHN SIDNEY HAWKINS, F.A.S.

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MDCCCXIII.

TABLE

CONTAINING THE NAMES OF THE

MEMBERS OF THE

AMERICAN MEDICAL ASSOCIATION

FOR THE YEAR 1885

AND THE NAMES OF THE

OFFICERS AND

MEMBERS OF THE

ASSOCIATION OF

PHYSICIANS



## PREFACE.

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PART of the ensuing Inquiry on the Origin of Gothic Architecture was originally intended to have been given in substance in a work undertaken in the year 1800, and announced for publication by Mr. John Thomas Smith. The whole of the letter-press the present author had engaged to furnish, as he accordingly did, and the book was to have been entitled, “An Account and Explanation of the Paintings and other Ornaments and Decorations discovered in the Year MDCCC. on the Walls of the House of Commons.” In the proposals circulated by Mr. Smith this intelligence had been promised for insertion in the then projected volume; and what was to have been there introduced on the above subject was, as well as the rest of the letter-press, actually written and completely prepared, but it was prevented by an accident from appearing in print. The substance of what in the present undertaking relates to the geometrical construction of the church of Milan, and the discovery of the book which supplied that information, was designed also at that time to have form-

ed, in like manner, a supplement to the above-mentioned Account and Explanation, and to have consisted of four plates, with as brief explanations as possible. Proposals for the publication of this supplement by Mr. Smith, the plates by him, and the explanations by the present writer, were accordingly also issued by him; but why the former species of intelligence has not been included in the book which Mr. Smith afterwards published in 1807, and neither that nor the latter have appeared agreeably to the proposals, has been already sufficiently explained to the public on another occasion. In performance of his engagement, by the production of that information, which he then undertook to supply, the present author has been advised by his friends to give it to the world in the form of this work; and the above circumstances would not have been noticed but for the necessary purpose of expressly declaring that what he then gave reason to expect he conceives himself still bound to perform, and that it is his intention here to accomplish it.

Till the month of June 1807 it was not discovered that the book above-mentioned was to make its appearance with the omission of a portion of what had been already prepared for it; but when this fact was ascertained, it was also clearly decided, that after such a circumstance there would have been a manifest impropriety in permitting what was meant for the supplement

to have been ushered into the world in the manner stated in the proposals. On the contrary, the opinion of those on whose judgment reliance might be placed was strongly in favour of converting the whole into a separate publication, on a plan which should combine and unite the various objects at first intended ; and on this step the present author accordingly decided. Three years from the time of this resolution elapsed in the preparation of drawings, not more numerous than those of the present work, though of a large folio size, which it was conceived the book then in contemplation would require ; but the artist's engagements, together with the necessary attention to accuracy in the measures, and other particulars, prevented him from completing them earlier. When thus prepared, at a considerable expense, it was found that these drawings could not be used, as the sum for engraving them was, on a calculation purposely made, thought greater than the probable sale of the book, if conducted in that mode, would warrant. It became, therefore, once more requisite to change the plan to that which has now been pursued ; and in accumulating a great quantity of additional information, writing the whole anew accordingly, making and engraving fresh drawings, and printing the letter-press and plates, the remainder of the time to the present period has been completely occupied.



From the delay, if it merits the name, because it was dictated not by negligence but necessity, and took place in opposition to the inclination of the author, no injury, but, on the contrary, considerable advantage, has arisen, as the subject has been at no time abandoned, and the pause in its progress has afforded the means of acquiring, by degrees, a variety of intelligence which could not before be obtained. The circumstances which led to the separation of this from the book in which it was originally intended to have been introduced have also been no less beneficial, by rendering this an independent publication, and permitting it to be now conducted on a much more extensive and complete plan, with an increased number of plates, eleven instead of four, and with greater attention to the recommendation of style than could have been allowed in the very limited and circumscribed space originally assigned to it.

The nature, plan, object, and extent of the present undertaking, together with the means pursued for the attainment of those ends to which it was directed, will be sufficiently obvious to the reader from an inspection of the abstract of its contents at the head of each Chapter, and from consulting a very copious Index, which for that purpose has been subjoined at the end of the work. Any further observation, therefore, is wholly superfluous, than merely to remark, as may be done

with the strictest truth and justice, that more has been accomplished than had before been attempted, and that what some persons had apparently thought impossible has here also been actually performed; for that the principles and proportions of Gothic architecture, which had been termed, in reality, destitute of existence, will here be found laid down on geometrical rules, with a degree of precision sufficient for every necessary purpose in the construction and erection of edifices in that style.

In the course of the work, which necessarily contains a variety of events, obtained from different authorities, and is intended to convey correct information, the several sources of intelligence have been fairly disclosed—a rule too seldom observed in many of the publications of the present time. By incompetent judges this will perhaps be censured as pedantry, and attributed to a wish to exhibit extensive reading; but had such been the object, the references might have been greatly increased in number, if, instead of establishing the relations by the testimony of a few authors, as has here been done, all the rest had been noticed in whose writings the same circumstances had been found. With persons of judgment no apology will be requisite for thus endeavouring to satisfy their minds that the narrations are entitled to credit, because they well know the value and necessity of properly authenticating facts.

Every kind of assistance which the work has received in its commencement or progress, from the labours or communications of others, has to its full extent been fairly and completely acknowledged, in the several places where that assistance or intelligence has been used; nor does the present author, on a revision of the whole, perceive any one omission of that sort. Had any such occurred, it would have here been confessed, as no ingenuous mind can be satisfied with assuming as its own what it did not really contribute; and from a variety of peculiar accidents, or a chain of fortuitous circumstances, one man may become, and is often, possessed of that knowledge which another has unsuccessfully laboured to acquire.

AN  
HISTORY  
OF THE  
ORIGIN AND ESTABLISHMENT  
OF  
**Gothic Architecture.**

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CHAPTER I.

*Various Opinions on the Origin of Gothic Architecture examined—State of Architecture from its Introduction at Rome to the Reign of Constantine—Removal of the Seat of the Roman Empire to Constantinople—Buildings of Constantinople considered.*

Numerous have been the authors who of late years have written on the subject of Gothic Architecture, or that style of building which prevailed in the middle ages, and various the opinions they have delivered on the question of its origin. But so little success has attended their labours, that the point still remains as doubtful as ever, with the addition of so many more impediments to be removed.

Cæsar Cæsarianus \*; the earliest professed comment-

\* Of this author, who is at present little known, a full account will be given in a subsequent part of this work.



ator on Vitruvius, has taken occasion, in his translation of that author, published in 1521, to mention Gothic architecture, which he styles German; but for this appellation he gives no reason. Whether he considered the Goths, to whom this kind of architecture has since been generally ascribed, as a branch of the Germans, because the countries which they inhabited were situated on the northern borders of Germany, and nearly contiguous to it, does not appear; nor is it discoverable from any thing he has said, whether he so named that style of building, as conceiving it first introduced into Italy either by William the German, in the twelfth century, or by James the German, in the thirteenth. The former architect was employed with Bonanno, in 1174, to erect the bell-tower at Pisa\*; and the latter rebuilt the church of the Virgin Mary at Assisi, which was finished in 1218†. Vasari also terms Gothic architecture ‘maniera Tedescha‡,’ and Gothic erections ‘lavori Tedeschi,’ at the very moment that he attributes its invention to the Goths§. But the facts related in the ensuing pages of this work will sufficiently demonstrate that there is no good ground for

\* Milizia, *Vite de piu celebri Architetti*, 4to. Roma, 1768, p. 145. Felibien, *Recueil Historique de la Vie et des Ouvrages des plus célèbres Architectes*, 4to. Paris, 1687, p. 197.

† Felibien, p. 217. Vasari, edit. Della Valle, 8vo. Sienna, 1791, vol. i. p. 255, styles this architect Jacopo Tedesco. Della Valle, in his *Lettere Senesi*, 4to. Venezia, 1782, vol. i. p. 185, &c. has advanced a conjecture that this church was not designed by James the German, but by Nicola de Pisa. His arguments do not, however, sufficiently prove the assertion.

‡ Vasari, vol. i. p. 225.

§ Ibid. vol. i. p. 120.

supposing it derived either from the Germans or the Goths.

Sufficient pains have not been exerted by the writers on this subject, for the ascertainment of the facts on which their conclusions depended. Whether the architecture of those countries or nations in which they imagined that style to have arisen bore any resemblance to the principles of the Gothic, they have not shown by evidence; and without the establishment of this circumstance, the supposition can never be successfully maintained. Nor do they, indeed, by any means agree with each other in opinion, as to what species was intended to be included in the term Gothic. Some have thought that all the architecture of the middle ages, comprehending at different periods the two extremes of excessive solidity and rudeness, and equal lightness and delicacy, were without distinction to be ascribed to the Goths\*. Others, without assigning any adequate reason, have confined it to that sort which prevailed in most countries of Europe, from the time of the destruction of the Greek and Roman style, to that period when pointed arches were introduced†. And others again have attributed it to that kind only which consisted of pointed arches, and was in use till the revival of the ancient Greek and Roman style which took place in the sixteenth century‡.

On two grounds alone could the term Gothic be

\* Bentham's Preface to his History of Ely Cathedral, inserted in *Essays on Gothic Architecture*, 8vo. Lond. 1800, p. 75.

† Ibid. p. 74.

‡ Ibid. p. 73.

properly applied to architecture—either because it was introduced by the Goths, or because it bore some resemblance to the style used by them. But in the progress of this inquiry it will be found, that the Goths had no peculiar style of building\*; and as they could not be the introducers of what they did not themselves use, the term is in every sense improper. Notwithstanding this impropriety, it has still, however, been found necessary, in the course of the present work, to retain the term Gothic, when speaking of that style, in order that the kind of building intended may be perfectly intelligible to such as know it by no other designation.

Fortunately, the variety of opinions is less than the number of authors; most of whom have only adopted the sentiments of some former writer of eminence. An examination of the principal writer's ideas will of course settle the authority of those of his adherents also; and it is believed that of these all that are material may, without any danger of omission, be comprehended under one or other of the following heads.

To prevent, however, any unmerited momentary impression which, from the reputation of those who have first advanced them, some of these opinions might perhaps make on the mind of the reader, if their refutation were postponed, it has been thought advisable that every opinion should be immediately succeeded by an enumeration of the objections to

\* Milizia, p. 3; and it will be more fully shown in the ensuing part of this work.



which it is liable. By means of this the reader will be enabled to decide on each as he proceeds, and to ascertain the degree of estimation due to the first, before he begins to consider the second.

1. Some have thought that Gothic architecture was derived from the Goths \*, especially from Theodoric, king of the Ostrogoths †. But the Goths, as has been noticed before, never had a peculiar style of architecture ‡, nor are they ever mentioned in history as the inventors or improvers of any art or science whatever. On the contrary, they resisted instruction; and when it was proposed that a young prince, their sovereign, then a child, should be placed under the tuition of skilful preceptors for education, they opposed and defeated the intention, lest it should tend, if carried into effect, to lessen his courage and abate his ferocity §.

2. Others have conceived that it came not from the Goths but the Saracens, and was first invented in the time of the Crusades ||; or, in other words, that it is of Arabian extraction, and was introduced by some persons returning from the Crusades ¶.

\* Vasari, vol. i. p. 130. Evelyn's Account of Architects, p. 9, at the end of his translation of Freart's Parallel of ancient Architecture, edit. 1723.

† Ornaments of Churches considered, p. 83.

‡ Milizia, 4to. p. 3.

§ Jo. Magni Historia Gothorum, fol. Romæ, 1553. Spon-danus, in his Epitome Baronii Annalium, vol. ii. p. 16, mentions the same fact on the authority of Procopius.

|| Sir C. Wren's Letter to the Bishop of Rochester, inserted in Widmore's History of Westminster Abbey, p. 46.

¶ Grose's Preface, as inserted in Essays on Gothic Architecture,

To this, which seems to refer to the more delicate and luxuriant Gothic alone, it is answered, that the existence of any such building among the Saracens, anterior to the introduction of Gothic architecture into Europe, has never been shown; nor has any resemblance been traced, from actual examples, between Saracenic and Gothic architecture; besides that the leading principles of this very style are discoverable in buildings erected in Europe long before the earliest Crusade took place\*.

3. Bishop Warburton has conjectured, that it owed its origin to the Goths when settled in Spain, and that the idea was taken from a grove of trees†.

From his referring the idea of the Gothic to a grove of trees, it is evident that Dr. Warburton could only mean the luxuriant Gothic. But the Goths, whom he supposes its inventors, were, so early as the year 713, driven out of Spain‡; and, prior to that, no such architecture as the luxuriant Gothic existed; nor are any of its leading features discoverable so early. A grove of trees does not more re-

p. 103. He states this as Sir Christopher Wren's opinion, but rejects it.

\* The dome at Pisa, built in 1016. The church of the abbey of Clugny, begun in 1093. See two views of the inside of this church, Plate I. and II. of the present work; and some instances from ornaments in mosaic, of so early an age as the fifth century, Plate III. fig. 1, 4, 5.

† Bishop Warburton, in a note on Pope's Epistles, the octavo edition, which is printed at length in *Essays on Gothic Architecture*, p. 120.

‡ Spondani Epitome Baronii Annalium, vol. ii. p. 178.

semble a Gothic than a Grecian building, because the idea of columns themselves, in Grecian architecture, was derived from that of a tree \* ; and the Gothic, or pointed arch, could never have been suggested by observing the intermixture of the boughs, because its geometrical construction had been already given in the writings of Euclid, who lived three centuries before the time of our Saviour †. The latter part of this opinion of Warburton is no more than an old error new revived ‡ ; and Warburton himself was but little acquainted with Gothic architecture. When he found he should have occasion to write on the subject, he thought it prudent to make a journey to Southwell in Nottinghamshire §, for the purpose of viewing the

\* Vitruvius, book v. chap. 1.

† See it represented, Plate III. fig. 4, in this work. Euclid lived about 332 years before our Saviour.—See *Helvici Chronologia*, fol. Oxon. 1662, p. 71, on the authority of Diogenes Laertius.

‡ It is said to have been the opinion of Raphael ; but is certainly mentioned in a letter, which till lately was considered as the production of Balthazar Castiglione. A pamphlet in Italian was however published at Florence, in 1799, entitled, *Congettura che una Lettera creduta di B. Castiglione, sia di Raffaello d'Urbino*, the object of which was, as its title intimates, to refer that opinion to Raphael, which before had passed for Balthazar Castiglione's. The letter is stated in the pamphlet, as is also Warburton's opinion. For this intelligence the present author is indebted to the Rev. Mr. Crowe, Public Orator of the University of Oxford ; who having, in one of his Lectures on the subject of Gothic architecture, delivered at the Royal Institution, noticed the fact, was so kind, on the application of a friend, as to furnish the present author with this information and authority.

§ Rastall's *History of Southwell*, 4to. Lond. 1787, p. 54, on the information of a member of that church.

church there, in order to obtain a sufficient idea of its distinguishing characteristics. Whether Warburton himself was afterwards satisfied with this opinion there is some reason to doubt, as the passage is not known to exist in more than one edition of his Commentary on Pope's Works, and that published several years before his death, though others afterwards appeared during his life \*.

4. Another idea has been advanced, that it came not from the Goths themselves, but was so called, as having its rise about the time when the Goths invaded Italy †.

In order to form a correct idea, the style of architecture practised in the middle ages must be divided into two periods: the former distinguished for excessive solidity and plainness, the latter for an equal degree of lightness and delicacy. Milizia has properly spoken of the former of these as the ancient ‡, the latter as the modern Gothic §; but the author of the above opinion has not observed any such distinction, and, indeed, seems to have had but a confused idea of the subject, of which he has consequently spoken in very general and indefinite terms. In point of fact, the architecture used about the time when the Goths

\* Warburton's note, in which this opinion is contained, occurs in the octavo edition of Pope's Works, printed at London, 1760, vol. iii. p. 327; and is inserted as an illustration of the twenty-ninth line of his fourth Moral Essay, the words of which are,

“ Load some vain church with old theatric state.”

† Bentham's Preface, as inserted in *Essays on Gothic Architecture*, p. 75.

‡ Milizia, p. 3.

§ Ibid. p. 4.



invaded Italy, as they did first in the year 493 \*, was the same as had been practised before †; nor was there any material change till long after the year 553, when they were driven from Italy ‡.

5. By others it has been supposed a gradual deviation from the Grecian; and the pointed arch has been thought suggested by the intersection of semicircular arches §.

The former supposition is certainly much nearer the fact than any of those opinions which have preceded it; but it is defective, as it neither ascertains the time of the rise of this style, nor the causes which produced those deviations from which it is said to have sprung. The latter is extremely objectionable, as it rests on the improbable ground that a fundamental geometrical form which occurs in the writings of Euclid ||, had been fortuitously discovered some centuries after, in consequence of an accidental application. To favour the conjecture, it must be contended that the supposed inventor of this form, who could not fail to have seen multitudes of such intersections, because numbers of them were in existence long before, was himself ignorant of the effect of that very application which he yet had the judgment to approve, and the skill to direct.

\* Spondani Epitome, vol. i. p. 700.

† See this more distinctly shown in a subsequent page of the present work.

‡ Spondani Epitome, vol. ii. p. 52.

§ Barry's Inquiry on the Obstructions to the Arts, 8vo. Lond. 1775, p. 182.

|| See it given as it occurs in his writings, in Plate III. fig. 4. in this work.

6. Dr. Milner is of opinion that it was invented in England by Henry of Winchester, from the intersection of two semicircular arches \*.

Besides some of the objections already stated, which apply with equal force to the present opinion, it is liable to a multitude of others peculiar to itself. The church erected by Henry of Winchester is not the earliest in which the pointed arch occurs; for the church of the abbey of Clugny in France, if it be still standing, is principally constructed with arches of that kind, which are placed in long ranges, sometimes on Corinthian columns, and sometimes on Corinthian pilasters †. Whether this edifice is still standing is uncertain; but it is known that the abbey of Clugny had been begun to be rebuilt in 1093 ‡, and that the church was consecrated in 1131 §, that the building at Winchester was not erected till 1136 ||, and that Henry of Winchester had himself been a monk in the abbey of Clugny ¶. In 1130, six years before Henry of Win-

\* Milner's History and Survey of the Antiquities of Winchester, vol. ii. p. 148; an extract from which is given in Essays on Gothic Architecture, p. 130.

† See two inside views of it in the Description particulière de la France, fol. tom. iii. seizième livraison, No. 56. Copies from these are given in Plate I. and II. of the present work; and some other instances are mentioned hereafter.

‡ Spondani Annalium Baronii Epitome, vol. ii. p. 474.

§ Ibid. p. 524.

|| Bishop Lowth's Life of William of Wykeham. See Essays on Gothic Architecture, p. 144.

¶ Godwin de Præsulibus Angliæ, edit. Richardson, p. 216, in a note on the authority of the Saxon Chronicle, Simeon of Durham, and the Continuator of Florence of Worcester. See also Joannis Brompton Chronicon inter Decem Scriptores, col. 1023.

chester built his church, Peter, abbot of Clugny, by the king's permission, made a visit to this country, and was very honourably received and entertained by all wherever he went \*. Henry of Winchester was not therefore likely to be ignorant as to the progress of the buildings at Clugny, or of what kind they were, especially as, by his subsequent conduct, he seems to have possessed a taste for architecture, which would naturally have led him to make such inquiries. Instances of the use of the pointed arch in buildings in Europe much earlier than that at Clugny will also be produced in the ensuing pages †.

7. Lastly, Mr. Dallaway declares his sentiments, that it sprang not from the Goths, but the mere love of novelty, and may have originated in the caprice of the Italians, who were either really ignorant or fancifully negligent of pure style ‡.

This conjecture does not pretend to derive assistance from the authority of any one fact, for no one has been cited, and it is in reality wholly unsupported. If admitted, it affords a very inadequate reason for any change, especially for the introduction of new forms; it by no means ascertains at what period of time or in what part of Italy such a variation from established custom most probably first took place; and is very little, if any thing, short of abandoning the question in despair.

\* *Chronicon Saxonicum*, edit. Gibson, 4to. Oxon. 1692, p. 235.

† See specimens from mosaic of the fifth century, in Plate III. of the present work.

‡ Dallaway's *Anecdotes of the Arts*, p. 2.



An extraordinary degree of want of precision is observable in almost every one of the foregoing opinions, which renders it in some cases extremely difficult to decide to which of the three kinds of architecture before described, their authors conceived the appellation of Gothic most properly to belong. But the labour of ascertaining this further than has already been done would be useless, because it has been sufficiently shown, that, in point of fact, the opinions themselves are not capable of being supported. It is more to the purpose to say, in order to afford a definite idea of the object of the present work, that the architecture into which it professes to inquire, is that of the middle ages, from the time of the decline of the science from the ancient Greek and Roman style, to the revival of that and the other arts in the sixteenth century. Of this there were two sorts, the one plain, massy, and ponderous; the other of slender proportions, luxuriantly ornamented, and light and delicate to excess.

From the time of its introduction as a science at Rome, which is believed to have been but little anterior to the reign of Augustus, to the latter end of his reign, a period of upwards of fifty years \*, architec-

\* L. Crassus the orator was the first person at Rome who had columns of foreign marble before his house. Pliny, lib. xxxvi. c. 3. Hoffman, in his *Lexicon*, says, he lived ninety years prior to our Saviour. M. Scaurus had three hundred and sixty columns at a temporary theatre, and seems by Pliny to be considered as the first person who introduced marble. Pliny, lib. xxxvi. c. 2. M. A. Scaurus was consul one hundred and six years anterior to the Christian æra. *Helvici Chronologia*, fol. Oxon. 1662, p. 79. But much attention to

ture appears to have been at Rome in a progressive state of improvement; but, having then attained the utmost summit of perfection of which it seemed capable, it soon after began to decline considerably.

In the reign of Constantine, which commenced in the year 306\*, and terminated in 336†, it had consequently contracted a great portion of corruption, to which the practice which then began to prevail, of destroying ancient buildings, and transferring their materials to new ones then undertaken, in no small degree most certainly contributed. As this method is discoverable as well in heathen as Christian erections, and no less in secular than in religious structures, it cannot justly be attributed to the introduction of Christianity; especially when it is observed, as is the case, that the earliest instance in which as yet it has been found to occur, is the arch of Constantine, unquestionably not a religious edifice, but erected by the senate and people of Rome, to commemorate his victory over Maxentius, in the year 312‡.

architecture does not appear to have been paid at Rome till the reign of Augustus, which commenced forty years earlier than our Saviour's birth, and continued fifty-six years. Helvici Chronologia, p. 83 and 85. Milizia, p. 2, says, that the Romans in the latter times of the republic adopted the Grecian architecture, and that in the reign of Augustus the imitation had equalled its original. As usual, he cites no authority—a very faulty practice, which merits every species of reprehension.

\* Helvici Chronologia, p. 96.

† Ibid.

‡ Ciampini De sacris Ædificiis, p. 118. Spondani Epitome, vol. i. p. 325.

Ciampini, in his *Vetera Monumenta*, vol. i. p. 13, speaking of the ancient church of St. Clement at Rome, which he describes as situate between the Lateran church and the theatre of Vespasian, says, it is his intention to give an idea of its external appearance; but that, before he pursues his purpose, he thinks it necessary to warn the reader by some cautions. These, he remarks, apply not only to the church in question, but also to all the rest of the churches of the fourth and fifth century. They even relate equally to some profane erections, and will, he adds, afford much light in the examination of all such edifices. Besides this, as they strongly tend to show the precise characteristics of the architecture of that period, it was thought the insertion of the substance of them in this place of the present work could not reasonably be dispensed with.

When the liberal arts, says this author, were, together with the Roman empire, rapidly declining, so great a degree of corruption and barbarity prevailed, that columns, bases, and capitals, carved with the most exquisite art, were every where cut out from the noblest buildings of the ancient emperors. To them were added shapeless masses formed by those new masons rather than architects; and these were heaped one upon another, to the disgrace of the art, and with rude and sordid barbarity. Hence, in those edifices may be seen at one and the same time many things which contradict each other: such, for instance, as columns of the same order, some with Corinthian, some with Ionic bases, and capitals of both sorts; the pavement covered partly with sacred, partly with profane



inscriptions, some of them mutilated and some complete ; one and the same frieze or architrave, sometimes very skilfully wrought, sometimes altogether barbarously hewed out rather than carved. Of this, the arch dedicated by the senate and people of Rome to Constantine is an instance \*, where the unskilfulness of that age is manifest, since statues taken from the arch of Trajan, and cornices, columns, and perhaps the very symmetry of the whole, borrowed thence, have been corrupted by these masons with barbarous carvings, which they have placed on the bases and above the curves of the arches and elsewhere. From the conjunction of works so dissimilar, the ignorance of those artificers who flourished in the age of Constantine will more evidently appear in proportion as these unskilful embossments of a latter age are compared with the very exquisite carvings of the preceding times. How great injury architecture, as well as the other arts, had suffered from the hand of Time is plain from these facts, since, in the fourth century, when some sparks of the former skill were still remaining, it had already fallen so much from its ancient dignity.

Discordant combinations like these, comprising co-

\* Spondanus, in his *Epitome of Baronius's Annals*, vol. i. p. 325, speaking, under the year 312, of the erection of the arch of Constantine, relates, that, on account of the scarcity of sculptors, the principal of which had been converted to Christianity, and suffered in the Dioclesian persecution, the stones for this arch were taken and inserted into it from the arches erected to the memory of the emperors Trajan and Marcus Aurelius, and from others of the more excellent buildings in Rome. This, he says, is evident from the difference of the workmanship.

columns of every order, and architraves and carvings of all kinds, collected by these rude artificers from buildings of emperors which had fallen down, and from temples of idols destroyed, had been heaped up in new erections, to the total disregard of the laws of architecture, and appear also in several churches, as will be obvious to every careful observer. Of many others, he says, the ancient church dedicated to St. Lawrence in Agro Verano, by which no doubt he means St. Lawrence without the walls, is one principal example, in which almost all the bases, capitals, and columns, are different from each other. On the frieze of the pulpit or reading-desk are carved several vessels and utensils which the gentiles used in their sacrifices, as may be seen in a cut which he inserts; and from this circumstance he asks, would not any one conclude that that piece of marble was taken from some building of the heathens?

The same author has also, vol. i. p. 10, produced another instance; for, mentioning the church of St. Paul without the walls at Rome \*, he relates, that the columns of the middle nave are forty in number, that they are of the Corinthian order, and placed twenty on each side; that sixteen of them are not completely finished, but in some parts left rough; and that of the remaining twenty-four, fourteen are composed of two pieces of marble. In the other naves the number of the columns is the same, but they are of a smaller size;

\* This church, he says, p. 10, was first erected by Constantine; and afterwards enlarged, or rather raised anew from the foundations, by the emperors Valentinian, Theodosius, and Arcadius.

and Severanus De Septem Urbis Ecclesiis says, that some of them were taken from Hadrian's Mole. Ciam-pini adds, that the same rule of architecture does not appear in them all, and that this is also the case with the bases. From this circumstance he conjectures that the more finished ones were procured from the above-mentioned building, and the more rude ones executed in the age of Theodosius, and other emperors, when a change much for the worse had taken place in the arts.

It is much to be regretted, that, in the application and adaptation of materials so valuable, the architects of the time had not also borrowed from the original buildings some of those excellent ideas of proportion of the parts to the whole, and of the general distribution of the several subordinate members, which the first designers had manifested in the construction of those edifices. Had they availed themselves of this source of intelligence, we should not, as now, have seen in the above-mentioned church of St. Paul, Corinthian columns of sixty feet high supporting semicircular arches of so comparatively contemptible a proportion as about one diameter and an half of the column in elevation, and no more \*. If arches had been intended, the columns ought to have been further asunder, which would have allowed the proper width and height for the arch above ; or, if the present distance of the columns had been fixed by any necessity, no arches should have been introduced, but only a straight architrave resting on the columns.

\* See Piranesi's print from a painting of Paul Panini.

From the circumstances before related, it is evident that gradual decline, in consequence of neglect or ignorance of principle, was not the only enemy against which architecture had to contend; and a variety of causes contributed to produce, soon after, a succession of events which greatly tended still further to accelerate its downfall.

The exertions of Constantine for the advancement of Christianity had met from the inhabitants of Rome, who were pagans, decided opposition and resistance, in consequence of their attachment to their ancient deities; and it happened, that in the year 324, on occasion of an annual customary procession of the army, in honour of some of the heathen deities, to the Capitol, Constantine was induced to express his sentiments against it in terms so strong as to draw on him the hatred of the senate and people, who regarded their religion as insulted. Their execrations in consequence appear to have been so vehemently uttered, that in a short time he found a residence at Rome no longer tolerable; and he therefore formed the resolution, which, in the same year, he carried into effect, of removing the seat of the empire. His first intention was to have fixed it on a spot near the ancient Ilium, or Troy, probably adopting the idea of those who have conceived that the Latin kingdom was founded by Æneas and the other Trojan princes, who, after the destruction of Troy, are supposed to have settled in Italy. Here he had already made a slight attempt towards laying the foundations of his intended new city, when, discovering superior advantages in the situation of Byzantium, he changed his resolution as to the



place, and thither transferred his materials and workmen \*.

With the view of suppressing idolatry at Rome by the removal of the objects of pagan devotion there, of adorning his new city with as many of the finest remains of ancient architecture as he could procure, and of lowering the importance of Rome as a rival, by stripping it of those recommendations and attractions which it had formerly enjoyed, Constantine had transferred from all the principal buildings at Rome statues, basso-relievos, columns, capitals, and all such other ornaments and members of architecture as could be employed in the erection of those edifices which he meant should enrich his new metropolis. These he transported to Byzantium, the name of which he afterwards changed to that of Constantinople, taking with him also from Rome all the ablest architects and workmen he could procure, for the purpose of rendering his intended capital superior, if possible, to ancient Rome, in its full height of splendour †.

It soon, however, became evident, that the architects he had engaged were greatly inferior in skill to

\* Spondani Epitome, vol. i. p. 354.

† Milizia, p. 129, says, that the emperor Constantine robbed almost the whole of the empire of statues, paintings, bas-reliefs, and the most valuable rarities in marble and bronze, to decorate Constantinople, and render it a new Rome. Vasari, edit. Della Valle, vol. i. p. 215, says, that the ultimate ruin of the arts was accomplished by Constantine's removal of the seat of the empire from Rome to Byzantium, because he carried with him into Greece not only all the best sculptors and other artificers of that age whom he could procure, but also an infinity of statues and other ornaments of the most exquisite workmanship.

those who had planned and erected the former buildings at Rome; for though, having obtained columns and other materials ready wrought, nothing more was wanting than a judicious distribution and arrangement of the whole, founded on the best rules of symmetry and proportion, yet in these last particulars the erections at Constantinople were extremely defective, and in no respect to be compared with those which had existed before at Rome, as evidenced by the few which survived the almost universal destruction there\*.

If the architects of Constantine were deficient, as they unquestionably were, in their knowledge of the principles of the science, and in judgment to prefer the approbation of the intelligent and judicious to the applause of the uninformed, it is certain they were by no means unacquainted with the facts, or disinclined to avail themselves of them, that the number of competent judges on every point of taste is always extremely small, and that the multitude are easily attracted by profusion of ornament. Real merit, arising from the exercise of sagacity, and the nice adjustment of forms and proportions, which could be estimated by a very few only, was with them therefore a qualification not worth the pains of acquiring; but as their object seems to have been extensive more than solid reputation, they

\* Milizia, p. 129, says that the architecture of Constantinople was not good, but as much inferior to that of Rome as the situation of Constantinople is superior to that of the turbid and crooked Tevere.—Teverone is a river in Italy, which passes Tivoli, and discharges itself into the Tiber below Rome. Moreri's Dict. on the authority of Maty, Dict. Geogr.

found it more to their purpose to employ splendour of decoration. Experience had shown, in the instance of buildings at Rome, where it had been introduced, the fondness of the generality for variety of forms and colours, and they therefore were lavish in the use of mosaic, a mode of ornament produced by bedding in mortar pieces of variegated marbles, or variously-coloured stones, so as to form a kind of pavement, in all the diversities of form, pattern, and colour, that a capricious and desultory imagination could suggest. This method, originally invented, as it is supposed, among the Persians, and from them transferred to the Greeks, had, together with the first idea of architectural science and decoration itself, been introduced at Rome \*. But though rich and dazzling in its effect when completed, it is wonderful it should have been ever adopted, as its progress in the execution must have been necessarily so slow, from the infinity of pieces of which any one pattern consisted, that the labour of years by a multitude of workmen must have been requisite for the completion of only a very few square feet in measure.

The churches of Santa Sophia at Constantinople †,

\* Ciampini, vol. i. p. 78, attributes the invention of mosaic to the Persians, and says, that from them the art passed to the Assyrians, from these to the Greeks, and from the Greeks to the Romans, in the time of Sylla, as Pliny relates.

† Erected by Constantine in 326; rebuilt in part, and enlarged to its present size, by Constantius, the son of Constantine.—Ciampini *De sacris Ædificiis*, p. 165, 166. Ciampini, p. 165, gives an extract from the Alexandrian Chronicle in the 285th Olympiad, which he

St. Paul without the walls of Rome \*, and St. Mary the Great †, there—the former as exhibited by Grelot ‡, and the two latter in prints by Piranesi, from the paintings of Paul Panini—are adequate examples of this style of building: but the remains at Constantinople of any of the magnificent buildings of Constantine, so often spoken of, are so few §, if any (for none but

says is the year of our Lord 360. In the passage which he inserts it appears that this church was consecrated on the 15th day of March in that year, which, as is remarked, was about thirty-four years after the foundation had been laid by Constantine. It is more probable, therefore, that it was begun by Constantine, and finished by his son; but there seems no reason to suppose that the son pulled down any part of his father's building. Grelot, in his *Relation d'un Voyage de Constantinople*, 4to. Paris, 1680, p. 98, affirms that this church, like the ancient ones of St. Peter and St. Paul at Rome, was at first only covered with a timber roof, and that being, therefore, liable to damage by fire, from which it had actually suffered in the reign of Theodosius the younger, and of Justinian, the latter emperor resolved to rebuild it entirely. This, Grelot says, he did from the foundation, changing as well the form of the building as the material, and putting the edifice into that state in which, says he, it is still to be seen.—See Grelot, p. 99.

\* Originally built by Constantine, and enlarged or rebuilt, as it now appears, by Valentinian, Theodosius, and Arcadius, about the year 386.—Ciampini *De sacris Ædificiis*, p. 109.

† St. Mary the Great is said by Vasari, vol. i. p. 216, to have been erected in the time of Pope Liberius, and to have been constructed principally of fragments from other buildings. Liberius was Pope from the year 352 to 367.—*Helvici Chronologia*, p. 99.

‡ *Relation d'un Voyage de Constantinople*, p. 147, 153.

§ Moreri, art. Constantine, says, Byzantium took the name of Constantinople about the year 330, when it was dedicated or consecrated. He adds, that the buildings of Constantine there being erected in haste, were destroyed in a short time; and that a few ages



those of his palace are recollected), and the appearance of the erections now existing there is so far from splendid, that there is reason to doubt whether their supposed excellence has not been much over-rated.

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after the reign of Constantine, scarcely any buildings were found there that were not modern. Moreri Dict. on the authority of Tillemont, *Hist. des Emp.* tom. iv.; and Banduri, *Numism. Imp. Rom.*

## CHAPTER II.

*Constantine's Buildings at Rome and elsewhere—Constantinople the Resort of Artists—State of Rome in consequence of the repeated Incursions of the barbarous Nations—Establishment of the Goths in Italy—Goths not the Inventors of what is erroneously called Gothic Architecture—Character of the Gothic Buildings—Italy freed from the Goths—Introduction and Establishment of the Lombards—Character of the Buildings of the Lombards.*

THE exertions of Constantine, which had for their principal object the erection and establishment of a city equal in magnitude and grandeur to the character which he meant it should assume, as the seat of the Roman empire, and the rival of Rome in beauty and magnificence, were yet not confined to his capital alone: Rome, Constantinople, Capua, Naples, France, the Holy Land, particularly in the neighbourhood of Jerusalem, Nicomedia, Antioch, and Heliopolis\* (now called Betsames, about forty-five miles east of Memphis in Egypt †), all partook of his attention, for in all of these he erected splendid edifices: but at the same time it is certainly true, that he spoiled the whole empire of statues, pictures, basso-relievos, and the finest rarities of marble

\* Ciampini De sacris Ædificiis, throughout.

† Heylyn's Cosmography, edit. 1703, p. 854. Milizia, p. 103, says that Heliopolis was the ancient name of Balbek.

and bronze, to decorate Constantinople, and render it a new Rome \* ; that the architecture of this latter capital was so far from excelling, that it was greatly inferior to that of Rome † ; and that Constantine himself cannot be regarded in any other view than as the first who led the way to the entire ruin and subversion of all the arts of design, and of architecture among the rest.

Nor were the subsequent structures erected at Constantinople or elsewhere, by the emperors Constantius, Theodosius, Arcadius, and Justinian, his successors, in any degree entitled to greater praise ; though, in imitation of Constantine, and in pursuance of his design, these persons had shown themselves anxious to render this new metropolis as flourishing and magnificent as ancient Rome itself, and for that purpose had enriched their buildings with statues procured from the spoils of Greece and Asia. Their workmen had no adequate idea of the real merits of architecture, and consequently failed in every attempt to express them ; but, like the painter of old in the case of Helen, what they were unable to render beautiful they determined to make rich, and in that they succeeded.

No name of any one of the numerous architects employed by Constantine in the erection of his new city is any where preserved ; and, indeed, throughout the whole of his reign, which lasted about thirty years ‡ ,

\* Milizia, p. 129. Vasari, vol. i. p. 215.

† Milizia, p. 129.

‡ He began to reign in 306, and ceased in 336. See a former note.

one architect only is named as existing, and he does not appear to have had any concern in the edifices of that city. This man, whose name was Metrodorus, was a Persian, and travelled from his own country into India. There he erected some fortifications, baths, and other edifices, and displayed a degree of science unknown before in that country, for which the Indians and their king rewarded him with many jewels of great value. On his return to Persia, he, in consequence of the persecution of the Christians which he witnessed in his own country, passed to Constantinople, and by means of his riches, and the rare gems he possessed, acquired sufficient favour and influence with the emperor Constantine, to prevail on him, according to some authors, to make war on the Persians in favour of the Christians \*. Milizia says, he does not know that this person erected any of the buildings at Constantinople or elsewhere †; but if the fact were, that none of them were designed by him, he might still, by the blaze of his wealth and the dazzling splendour of his collection of jewels, either have excited in the mind of Constantine a taste for embellishments in imitation of precious stones, or at least have contributed to confirm him in the resolution of employing, as he certainly did ‡, those decorations which

\* Milizia, p. 129:

† Ibid. p. 130.

‡ Ciampini *De sacris Ædificiis*, p. 175, says, on the authority of Codinus, that the church of St. Stephen at Constantinople was erected by Constantine, but that Leo the Philosopher reduced it to a smaller size, and transferred the materials—columns, marbles, and mosaic—to the church of All Saints, built by himself. The same author, p. 176, relates, that the church of St. Euphemia, in the Horse-course at Constantinople, was built and adorned with pre-



afterwards were adopted as the principal recommendations of architecture.

Neither are the names of architects employed in the subsequent periods in that neighbourhood by any means numerous; as, from the time of Constantine, who died in 336 \*, to the end of the reign of Justinian, in 565 †, only nine architects are named by Milizia, as engaged in erections in that part of the world, most, if not all, of them apparently Greeks. To Alyppius of Antioch was committed, under the reign of the emperor Julian, in the year 363, the rebuilding of the temple at Jerusalem, or rather the attempt, for it did not succeed ‡. Ciriades was employed by the emperor Theodosius, who began to reign in 379 §, to erect a new basilica or court of justice, and a bridge ||. Entinopus of Candia was the original builder of Venice, in 420 ¶. Eterius was architect to the emperor Anastasius, who reigned in 491 \*\*, and built for him in the great palace at Constantinople an erection called Chalci, probably a saloon, says Milizia ††. And by Anthemius of Tralli, a city

cious marbles by Constantine. In p. 163 an extract from Eusebius is given, in which it is asserted, that, after his victory over the Persians, Constantine erected at Constantinople a church in memory of the martyrdom of the Apostles; and when he had raised the building to an immense height, he rendered it splendid by various kinds of stones, encrusting it with marble from the ground quite up to the vaulting.

\* Helvici Chronologia, p. 96.

† Ibid. p. 106.

‡ Milizia, p. 130.

§ Helvici Chronologia, p. 98.

|| Milizia, p. 130.

¶ Ibid. p. 131.

\*\* Helvici Chronologia, p. 102.

†† Milizia, p. 134. As Χαλκος is used by some authors to express arms in general, and by others to imply brazen coin or money

of Lydia†, and Isidore of Miletus‡, was the church of Santa Sophia at Constantinople built, in the time of Justinian§, who began his reign in 527 ||. Of this church, Milizia, p. 135, relates, that, when first erected by Constantine, it had only a timber roof; that it was afterwards burnt, and repaired at the expense of the other emperors, and of Theodosius; and that Justinian set himself to construct a more splendid edifice, and, when he saw it completed, exclaimed with joy, “ I have surpassed thee, O Solomon¶ !” But Milizia remarks, that the bases and capitals to the columns have no resemblance of the Grecian orders\*\* : so much, says he, had good architecture degenerated in the neighbourhood where it had first risen, and where it had at one time

(see Scapula's Lexicon), it is much more probable that this edifice was an armory or treasury.

† Milizia, p. 135.

‡ Ibid. p. 137 and 135.

§ Ibid. p. 135.

|| Helvici Chronologia, p. 104.

¶ Grelot, p. 99, relates the same fact; to which he adds, that Justinian employed for seventeen years, during which he was engaged in the erection and completion of this church, all the revenues of Egypt, which amounted then to no less than two millions of gold a year, and must be considered as a very large sum for that time. The same author also notices, p. 101, that, as to the body of the building, it still continued in his time the same as it had been from the period when it was rebuilt by Justinian.

\*\* Grelot, p. 151, speaking of four large columns of Egyptian granite in this church, which are forty feet high and all of one piece, says that their capitals are of a particular order, which may be named barbarous Greek. He adds, that the artist had endeavoured to imitate the acanthus, but had succeeded very ill, though it is true that the delicacy with which they are cut is admirable.

made its great progress. From his description of the building, which is very particular, it appears that the cupola and pavement are ornamented with mosaic, and the walls with painting. Isidore of Constantinople, the nephew of Isidore of Miletus, built, in conjunction with John of Miletus, the city Zenobia in Syria \*; and Crises was of Alexandria, and flourished in the sixth century †; but Milizia does not notice any work in which he was employed. Vegetius asserts, that more than five hundred architects were employed by Justinian to repair buildings in decay, and erect new ones in several of the provinces then lately acquired from the emperor of the West ‡: but it is probable, he reckons in the number all those persons who were employed in the construction of buildings, such as masons and others, instead of confining the appellation to those alone who designed the edifices, and superintended their erection.

Constantinople was now become what Rome had before been, the resort of men of skill in each profession and of all countries. Artists of every kind were attracted thither from various parts, particularly Greece—an advantage which it seems to have enjoyed to a much later period, as in the tenth century it was still considered as the Athens of the Italians §. But while Con-

\* Milizia, p. 137.

† Ibid.

‡ Ibid.

§ Lettere Senesi, 4to. Venezia, 1782, vol. i. p. 179. Leo Ostiensis, in his Chronicle of the Monastery of Cassino, l. iii. c. 28, relates, that in the year 1066, Desiderius, abbot of Monte Cassino, erected a new church in honour of St. Benedict, and sent emissaries to Constantinople to hire artificers skilful in the art of mosaic, which for fifty years and more the study of the Latin language had caused to be neglected.—Ciampini Vet. Mon. vol. ii. p. 104; and again, p. 117.

stantinople, the new metropolis of the empire, was thus rising to fame, Rome, the former capital, at one time the mistress of the world, had been from the time of Constantine's removal sinking in equal proportion in reputation and importance. Her buildings, as spoiled by Constantine of their principal ornaments, remained unrepaired; few new edifices, or re-erections of former ones, had been undertaken, and the incursions of the Goths and Vandals at different periods not long after, repeated with small intermission, and attended with all the havoc and devastation of war, contributed still further to deface and destroy those examples of ancient skill and science which had already lost much of their beauty from the treatment they had experienced from Constantine. It is true, indeed, that the emperor Theodosius, even when most strenuously labouring the extirpation of paganism, still preserved from destruction all such statues as were the productions of the more excellent artists, because they were public ornaments of the city, contenting himself only with prohibiting the use of them as objects of adoration\*. But the Goths, by whom Rome was afterwards captured, observed no such distinction, and what he had thus spared was accordingly by them afterwards demolished; for about the year 409, Alaric, king of the Goths, besieged Rome, for the possession of which he had long thirsted†. His real motive was to revenge himself on the emperor Theodosius for the death of Stilico, an ambitious and turbulent nobleman, who had been assassinated in an unsuccessful attempt to dethrone the

\* Spondani Epitome, vol. i. p. 524. † Ibid. vol. i. p. 585.



emperor. But to disguise this, he pretended himself urged by a divine commission to the destruction of the city on account of its idolatry; for the Goths from so early a period as the reign of Constantine were Christians, though they afterwards espoused and adopted the heretical tenets of Arius †. In the next year, 410, he obtained possession of it; and though he spared all who took refuge in St. Peter's church, he yet gave up the city to three days', or, as some say, to six days' plunder ‡; in which, without doubt, multitudes of the finest statues and temples, because they were heathen, must have perished. A like fate it again underwent about the year 455, from Genseric, king of the Vandals, who had been invited into Italy by the empress Eudocia, to revenge the murder of her first husband, Valentinian, upon Petronius Maximus, her second, the usurper of his empire; and on this last occasion the plunder of the city lasted fourteen days §. It again, in 475, experienced a similar treatment from Odoacer, king of the Heruli, whose assistance had been solicited by Nepos, the emperor, for the purpose of punishing the rebellion of Orestes, a patrician, who had, at Ravenna, caused his own son Momyllus to be proclaimed emperor, by the name of Augustulus ||, and proceeded to open hostility. After the taking of Rome, Odoacer succeeded, in 476, in establishing himself at

† Spondanus, in his *Epitome of Baronius's Annals*, vol. i. p. 482, under the year 370, says that the Goths became Christians in the time of Constantine, by whom they were vanquished; but that Ulphilas, bishop of the Goths, seduced them to Arianism.

‡ Spondani *Epitome*, vol. i. p. 586.

§ *Ibid.* vol. i. p. 669.

|| *Ibid.* vol. i. p. 682.

Ravenna as king of Italy †, but was dispossessed of his throne, and soon after of his life, by Theodoric, king of the Goths, in 493 ‡; and this of Theodoric was the first actual settlement of the Goths in Italy. Rome's greatest destruction, however, took place in the reign of Justinian, about the year 547 §, when Totila, king of the Goths, in prosecution of a war which had then already lasted twelve years, between the Goths and the emperors of Constantinople, obtained possession of Rome, and, in revenge for the emperor Justinian's refusal of his offers for peace, had determined to level it with the ground. This resolution he had in part accomplished, but was induced to desist from further demolition by the forcible remonstrances of Belisarius, his adversary's general ||.

Although the conduct of the Goths in the instances already produced tended much more strongly to the destruction than to the restoration of what had already suffered, or the preservation of what still remained; yet when Italy, which they had thus desolated in the various attempts to subjugate it to their own power, had at length been completely subdued, they began to think it merited a better fate than to be permitted to continue in its then state of ruin. When Theodoric, therefore, had obtained, in 493, possession of the kingdom of Italy, and had found himself, not long after, securely settled in his newly-acquired dominions, one of his first cares was the rebuilding of most of the principal cities, as some compensation for the damage

† Spondani Epitome, vol. i. p. 685.

§ Ibid. vol. ii. p. 44.

‡ Ibid. vol. i. p. 700.

|| Ibid. vol. ii. p. 47.

which that whole country had sustained from the reiterated incursions of the various denominations of barbarians \*. In consequence of this, a new style of architecture has been attributed to him and the Goths; and they have, though without reason, been considered as the authors and inventors of that light and delicate one which prevailed in the middle ages. Any like this they do not seem to have used; and it certainly was not introduced into Europe till several centuries after the Goths, as a nation, had ceased to exist.

In their own country the Goths had no architecture of their own †; they did not bring with them into Italy any architects, painters, or poets, but were all soldiers. When settled in Italy, they made use of Italian architects, and in their architecture they professed to follow the Roman style ‡. And, though in the church of St. Agatha, at Ravenna, there is an instance of a pointed arch over the head of our Saviour, in a picture in mosaic; yet that church was built about the year 400 ||, ninety-three years before the arrival of

\* Jo. Magni Gothorum Sueonumque Historia, fol. Roma, 1554, p. 326.

† Milizia, p. 8, 133. Muratori, in his *Dissertazioni sopra le Antichità Italiane*, 8vo. Roma, 1755, tom. i. part 2, p. 69, says it does not appear, that after the arrival of the Goths in Italy, in the sixth century, architecture in that country was different from the Roman. He adds, we have the testimony of Cassiodorus to the contrary, in a passage which he inserts. But he is mistaken in fixing the arrival of the Goths in Italy in the sixth century, because it is manifest, from the authorities before cited in the present work, that they were already settled there in the latter part of the fifth.

‡ Milizia, p. 8. It is not very clear what is to be understood by the Roman style. But see this point considered in a future page.

|| Ciampini, vol. i. p. 184.

Theodoric in Italy. The picture is believed, with strong reason, to be of nearly the same time; and the architect, whose name was Gemellus\*, appears from his name to have been probably a Roman. Besides all this, the architects employed by Theodoric in rebuilding the cities of Italy, were in no one instance Goths, but are found to have been Boetius and Symmachus, both apparently Romans, Cassiodorus, a Calabrian †, but all three patricians of Rome ‡; and Aloisius §, whose country is unknown, though he might perhaps have been a Greek, and procured from Constantinople, or its neighbourhood. Certain it is, that from Rome and Constantinople the marbles were brought with which the buildings at Ravenna were decorated ||; and it is most probable, that the architects themselves should have been obtained from the same places also.

Vasari ¶ has characterized the productions of the Goths in general, in the instance of painting, by saying that the masters of that time used those caprices and that folly which are still to be seen in old buildings. The same happened, he observes, with respect to architecture; for erections being wanted, and beauty and good style being entirely neglected in consequence of the

\* Ciampini, vol. i. p. 184.

† Cassiodorus was born at Scyllacium, a city of the Brutii. See his Life, prefixed to the folio edition of his works, Rothomagi, 1679, p. 3. Hoffman, in his Lexicon, says Scyllaceum is a town on the borders of Calabria, that it is also called Scylletium, and commonly Squilacci. He gives as his authority, Cluver. Ital. Ant. l. 4. c. 15.

‡ Felibien, Recueil Historique sur la Vie et des Ouvrages des plus célèbres Architectes, 4to. Paris, 1687, p. 142.

§ Ibid. p. 137. Milizia, p. 132.

|| Jo. Magnus, p. 338.

¶ Vol. i. p. 223.



death of the artists, and the destruction and ruin of their works, those who then applied themselves to objects of this nature, did not erect edifices that had any degree of grace, either in disposition, proportion, design, or any other particular. Hence arose new architects, who from their own barbarous nations introduced that mode of building which we now, says Vasari, call German, and who executed works rather worthy our ridicule, than calculated for their own reputation\*, until abler artists afterwards invented a style of greater merit, and more conformable to the excellent antique. This manner, by which he evidently

\* About the spring of the year 1806, while the present author was preparing the letter-press for a work, the publication of which Mr. John Thomas Smith had undertaken, he was favoured by Mr. Haslam, of Bethlehem Hospital, with the first information, and the loan, through Mr. Smith, of Professor Ihre's *Analecta Ulphilana duabus comprehensa Dissertationibus; prima de Codice Argenteo & Litteratura Gothica, altera de Mæso-Gothorum Nominibus substantivis & adjectivis*: 4to. Upsaliæ, 1769. In this book was an engraving, containing a specimen from the Gothic version of the Gospels by Ulphilas, bishop of the Minor Goths in Mæsia, or, to express it more concisely, the Mæso-Goths in the fourth century. It was supposed that this translation was in manuscript, and as old as the fifth or sixth century, and that the above specimen would therefore decisively ascertain the style of architecture used by the Goths, some arcades consisting of columns and semicircular arches being contained in it; but it has since been discovered, that the original book is not a manuscript, but stamped with hot types upon vellum. See an extract from Ihre's Preface to the Fragments of Ulphilas's Version of some Portions of St. Paul's Epistle to the Romans, published by Busching, at Berlin, in 1773, as given in Henshall's *Etymological Organic Reasoner*, 8vo. London, 1807, in the *History of the Codex Argenteus*, p. 41. As the age and country in which the original book was thus printed are wholly unknown, it could not be used as evidence,

means the barbarous manner he had before mentioned, may, he adds, be seen in the structures erected by them; as, for instance, the palace built by Theodoric, king of Italy, at Ravenna, another in Pavia, and another in Modena, which are all of a barbarous style, and more rich and large than well-designed or of good architecture. The same, he remarks, may be affirmed of St. Stephen's at Rimini, St. Martin's at Ravenna, and the church of St. John the Evangelist, built in the same city by Galla Placidia, about the year 418; of that of St. Vitalis, erected in 547; and, in short, of many other monasteries and churches afterwards constructed by the Lombards: all which edifices, says he, are large and magnificent, but of the most absurd architecture; as are also many Benedictine abbeys in France, the church and monastery of Monte Cassino, and the church of St. John the Baptist at Monza, erected by Theodolinda, whom he erroneously styles queen of the Goths, instead of queen of the Lombards.

After a residence of about sixty years in Italy, and a war of fifteen, to expel them, that country was, in 553, at length freed from the dominion of the Goths by Narses, the general of the emperor Justinian, who destroyed their king Totila, together with his whole army\*. In France and Spain they continued till the year 713, when in both countries they experienced a similar destruction†. To them succeeded in Italy, in 568, the Lombards, originally a branch, as it seems, of the Huns, who, about forty years before, quitting their first settlement in the island of Scandinavia, had taken possession of Pannonia, or all that tract since denominated

\* Spondani Epitome, vol. ii. p. 52.

† Ibid. vol. ii. p. 178.

Hungary and Scлавonia\*. Hence they made an incursion into Italy under their king Alboin †, who established himself in this latter kingdom, and reigned till 572, in which year he was assassinated‡. On the death of Clephis, the successor of Alboin, who, after a reign of one year and five months, was slain by his servant, in 573, his generals, thirty-six in number, divided the cities of Italy among them, which they miserably depopulated in the contest for possession, every where murdering the inhabitants, spoiling the churches and monasteries, and killing the ecclesiastics. To so great an extent had these ravages and enormities reached, that they were reckoned among the persecutions of the church, the Lombards being at this time either wholly gentiles, or heretical Arians§. Weary at length of the evils of a government without an head, which had subsisted ten years, under their several leaders or generals, the Lombards, in 585, determined on electing a king. They accordingly chose for their monarch Antharith, the son of their last preceding sovereign; and because his own name was barbarous, they surnamed him Flavius, an appellation which their subsequent kings, in like manner, afterwards assumed||. Antharith died in 590, leaving a widow, Theodolinda, whom he had not long before married. After his death she was elected queen, and, in the month of May 591, became the wife of Agilulphus, a Tauritanian general, an Arian. Having subdued and destroyed his enemies, he established his kingdom

\* Spondani Epitome, vol. ii. p. 67.

† Ibid. vol. ii. p. 69.

§ Ibid. vol. ii. p. 72.

‡ Ibid. vol. ii. p. 71.

|| Ibid. vol. ii. p. 81.

in Italy ; for, excepting Rome and Ravenna, with the other places dependent on them, all Italy, from the Alps on one side to Rhegium in Calabria on the other, was under his dominion. At the instance of Theodolinda, he, together with all the Lombards, relinquished Paganism and Arianism, and became a convert to the catholic faith : in consequence of this he was baptized by the name of Paulus\* ; and dying in 616, after a reign of twenty-five years, was succeeded by his eldest son Edawald, who being a minor, was committed to the guardianship and tuition of his mother, queen Theodolinda. Under her administration the churches were restored, and many donations conferred on religious foundations; but the most celebrated erection was the church built in honour of St. John the Baptist, at Monza, twelve miles from the city of Milan; and from that time the Lombards adopted St. John the Baptist as their patron saint†.

The structures of the Goths are characterized by Vasari as large and magnificent, but of absurd and extravagant architecture‡ ; and of the same kind were, he says, the following edifices enumerated by him as the productions of the Lombards : the church of St. John at Pavia, built by Gundiperga, daughter of queen Theodolinda, and the church of St. Saviour in the same city, erected by Aripert, that queen's brother, and who succeeded Rodoald, the husband of Gundiperga, in the kingdom ; the church of St. Ambrose at Pavia, built by Grimoald, king of the Lombards, who dethroned Perterit, the son of Ri-

\* Spondani Epitome, vol. ii. p. 90.

† Ibid. vol. ii. p. 116.

‡ Vol. i. p. 223.



perto; but Perterit being restored to the kingdom, after the death of Grimoald, built at Pavia a nunnery called the New Monastery, in honour of the Virgin Mary and St. Agatha; and the queen erected, without the walls of that city, another, dedicated to the Virgin Mary in Pertica. In like manner, Comperto, the son of Perterit, built a monastery and church to St. George, called, The Crowned, or Victorious, on the spot where he had obtained a signal victory; and this monastery was also of the same style of building. Of this kind also were the church which Luitprand, king of the Lombards, contemporary with king Pepin, father of Charlemagne, built in Pavia, which is called St. Pietro in Cieldauro; that of St. Pietro Clivate, which Desiderius, the successor of Astolfo in his kingdom, erected in the diocese of Milan; the monastery of St. Vincent in Milan, and that of St. Julia at Brescia. All these were constructed with great expense, but with extremely barbarous and disorderly architecture\*.

From all that Vasari has here said, it should seem, that the Lombards, as far as they were able, pursued in their buildings the same conduct as the Goths; and in reality there appears to have been very little, if any, difference of style between them. That, like them, they made them spacious and rich, with the decorations of painting and mosaic, may well be believed; but there is reason to think, that either their attempts at architectural decorations were few, or that, whenever they were made, they were

\* Vasari, vol. i. p. 224.

far from successful: for not having, like the Goths, obtained, either previous to their arrival in Italy, or subsequent to their settlement there, any fragments of ancient buildings from Rome or elsewhere, and not being in possession either of Rome or Ravenna, from which such materials, when wanted, could have been procured, they were reduced to the necessity of employing their own workmen to design and execute those ornaments, at which they were by no means expert. In correctness and truth of proportion and form, and nicety of workmanship of the several members, the buildings of the Lombards must have been considerably inferior even to those of the Goths; but in one respect they both agreed, and that was in the immense solidity and unreasonable thickness of their walls. This characteristic is so much to be relied on, in judging of the degree of the architectural science of their workmen, that it is extraordinary Vasari, an architect as well as painter by profession, should have left it unnoticed, especially as it long after continued one distinguishing peculiarity of similar erections.

Exorbitant and unnecessary proportions of strength are indeed invariably the consequence, and certainly the clearest symptoms of the decay of architectural science, as they indicate a complete ignorance of the principles and powers of geometry. But in addition to this it will be found, that the buildings of all nations, and indeed of the same nation at different periods, partake in a great measure of the general character and disposition of the inhabitants themselves; so that, from observing their edifices, no in-

adequate idea may be formed of their genius and pursuits. If the buildings of any country are observed to be spacious, massy, and plain, it is a sure sign that its inhabitants have little idea of the comforts or elegance of domestic life; but that, on the contrary, they are more addicted to the ferocious pursuits of hunting or war, and fully aware of the policy of creating a numerous train of dependents, as the means of ensuring the necessary assistance of numbers in time of danger. If they are abundant in ornament, a proportionable degree of luxury and refinement may be justly conceived as the propensity of the nation; and if their buildings are regulated by the laws of true symmetry, proportion, and beauty, no one can justly deny the conclusion, that the designers of them, and the persons among whom they occur, are possessed of true judgment and taste.

Both the Goths and the Lombards, as hostile invaders of a foreign country, had, for a long series of years, been engaged in war; and, indeed, as to these last, it may truly be said, that, till the commencement of the reign of Edawald, under the administration of his mother Theodolinda, in 616, no attention had been paid to the repair or erection of churches, or of any buildings apparently for the purposes of civil life. By the chances of war, and the alternate succession of victory and defeat, to which they felt themselves constantly exposed, they were taught the necessity of fortifications, as the principal mode of defence, and of constructing the habitations of their lords and leaders, not as elegant and ornamented residences, but as castles for resistance, with

a due regard to the probability of an attack from an enemy, and the ultimate object of impregnable strength. To them, therefore, strength to repel or withstand the assault of engines calculated by their immense power for their destruction, was the principal, and, perhaps, almost the only recommendation which a building could possess. They had not, like the Goths, in any of their irruptions acquired materials for the erection of edifices of any kind, and, therefore, were not confined to the use of ornament, or to follow any particular style of architecture; but, in those instances, of which there were several at Pavia, their capital, and elsewhere, in which they built public structures for the residence of their kings, or principal nobility, security for the lives and property of themselves and their families was an indispensable requisite; and buildings that would stand, unshaken, the assaults of all besiegers, were more the objects of their choice, than those in which greater delicacy of execution might have been displayed. Nor was this by any means an unreasonable precaution, as the event frequently showed that the utmost military science which could be employed on such an occasion, was not more than adequate to the necessary resistance against hostile invaders.



## CHAPTER III.

*Lombard Buildings, why massy—Lancet Windows, why so called—Conversion of Clovis, King of France—Structures in France by him, and their Character—Early Architects and Masons the Bishops and Monks themselves—Cathedral of St. Denis built by Dagobert—Buildings of the Lombards in the seventh Century commended by Felibien—Erections in England in the seventh Century, and earlier—State of Architecture in France, from the seventh Century to the Time of Charlemagne—Naiton, King of the Picts, sends for Architects—Roman Mode of Building, what—Edifices in England in the eighth Century—A splendid Chapel at Glastonbury constructed by King Ina—Charlemagne's Erections—Chapel at Aix-la-Chapelle—Arches in it, whether pointed—A Coin of Charlemagne's described—Its Authenticity examined—Other Buildings of Charlemagne.*

By perseverance, for a length of time, in a principle of action, well adapted, perhaps, to one object, the mind is apt to acquire the habit of transferring it to others of a nearly similar nature, but where no such propriety really exists. The principle of security, which in the erection of palaces for the residence of their sovereigns, and of other public structures, as arsenals and ma-

gazines for instance, had induced the builders to construct them of more than ordinary solidity, had given such a direction and bias to the studies of the architects of the time, that they could not quit the idea of strength, even when the edifices they were erecting required, from their nature, no such quality; and as an inattention to geometrical principles will naturally lead to the employment of more solidity and strength than is needful, their churches partook of the same ponderous style; a manifest proof of the decay of architectural science. Thick walls, no more perhaps than necessary in the construction of castles, were hence introduced into religious edifices. Windows so narrow as to afford no aim to the arrows of the besiegers, but yet sufficiently wide to give the besieged the means of seeing and marking out for destruction the most active and valorous of their opponents, had, with the view of defence, been employed in fortresses. But the idea was now transferred to ecclesiastical erections; and though it is certainly true that the windows of these last were considerably wider in proportion, yet there cannot be a doubt that the long narrow windows to be seen in such structures, were first suggested by the circumstance above mentioned. The appellation of lancet windows, which has been applied to them, and which modern antiquaries have adopted without understanding its meaning, is a sufficient proof of their original \*. This mode of constructing

\* Olaus Magnus, in his *Description of the Buildings of the Northern Nations*, about the year 1546, when he flourished (see *Moreri's Dict.*), says, that the doors of the houses in the extreme parts of the kingdom, apparently meaning Sweden, are purposely

the walls of immense thickness, was so long practised by the subsequent architects, that they seem at length to have been almost persuaded, that no building of any considerable dimensions was likely to stand, in which the walls were of less solidity than, in some cases, six, and, in others, nine feet in thickness. And although the kingdom of the Lombards was, in 774, ended by the capture of Desiderius, their sovereign, and all his army, by Charlemagne, who, at the instance of Pope Adrian, had marched with an army into Italy to expel the Lombards\*; yet this style, when once admitted, maintained its ground, though with different degrees of improvement, not only in Italy, but in France, and other parts also, till a general effort for the improvement of architecture produced, some centuries after, a style as remarkable for the opposite qualities of extreme light-

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made narrow and low, that they may be less accessible to robbers and enemies; he mentions further, that, in order that such persons and open enemies may be more successfully resisted, the walls are perforated with small apertures for the purpose of discharging arrows through them.—*Olai Magni Historia de Gentibus Septentrionalibus in Epitomen redacta*; 12mo. Antverpiæ, 1558, p. 115, &c. From a similar use of such narrow windows in the military structures of the middle ages, and not from any reference which they could be supposed to bear to the surgical instrument, a lancet, these windows have acquired the appellation of lancet windows, because ‘lancette’ in French means a little lance or dart. It is so explained by Cotgrave in his Dictionary; and Du Fresne, in his *Glossarium ad Scriptores mediæ et infimæ Latinitatis*, art. *Lanceola*, says, *Lanceola* means a knife, in French *lancette*; and that *Capitolinus*, in his *Life of the younger Maximin*, uses *lanceola* to signify a little lance.

\* *Spondani Epitome*, vol. ii. p. 214.

ness, profusion of ornament, and delicacy of workmanship.

In all countries in which Christianity has as yet been received, the change from paganism has been immediately, and, indeed, necessarily followed by the erection of Christian churches. Some few instances of such buildings by particular individuals, may perhaps occur even before the general conversion of the whole country ; but whenever an universal change of religious opinions can be ascertained to have taken place, the inducements to ecclesiastical foundations will be found to have operated forcibly on the minds of the new converts ; and the number of such endowments will be proportionably great. Clovis, king of France, then a pagan, but afterwards the first Christian monarch of that country, being, in the year 499, in great personal danger in a battle against the Germans, made a vow, that, if he obtained the victory, he would renounce paganism, and embrace the Christian religion, to which he had been solicited by the continued endeavours of his wife Clotildis. The battle having terminated in his favour, and the danger which threatened him being averted, he, together with a great part of his army, was accordingly after the battle baptized by St. Remigius, bishop of Rheims\*. In consequence of this, he bestowed many donations on the Christian churches of his kingdom then already built, restored to them those rights and privileges of which they before had been deprived, and augmented their number by the erection of fresh

\* Spondani Epitome, vol. i. p. 707.



edifices. Among others, he built, in the year 507, the church of St. Peter and St. Paul, without the walls of Paris, since called St. Genevieve; the church and abbey of St. Peter at Chartres, and that of St. Menin near Orleans; many others were also erected, either by order of this king, or during his reign. In the year 542, or 559, his son Childebert, one of his successors, erected near Paris the church and abbey of St. Vincent, afterwards called St. Germain de Prez; and Clotharius I. brother of Childebert, built the church of St. Medard at Soissons, and about the year 564 repaired that of St. Martin at Tours, and covered it with copper\*.

Although but few remains of these ancient edifices are now existing, yet Felibien says these few are still sufficient to show the state of architecture under the first kings of France. The ancient square tower of the church of St. Germain de Prez, at Paris; and that of the church of St. Peter, at Chartres; which are supposed of this time, prove, says Felibien, that the architects sought no more in their buildings than to give them all possible solidity, not regarding that beauty of proportions or ornaments which evidences knowledge in design. With this, indeed, they had little acquaintance, though it is the foundation of all that is excellent and beautiful in architecture. The workmen employed for the construction of these edifices were of no other sort than mere masons, who had no more science than what arose from practice in preparing cement and choosing good materials, in which,

\* Felibien, p. 143.

it is true, they used such precautions, that nothing can be more solid than what they have erected. Such persons do not merit the appellation of architects, and few of the laity deserved that rank under the earliest kings of France ; for the laity applied themselves to the profession of war, necessarily indeed, considering the temper and character of those times, and relinquished to the clergy the cultivation of the sciences \*.

Whoever considers the uniform system of destruction which had prevailed from the time of Constantine to a much later period, in tearing from one building those materials ready wrought which were wanted for the erection of another, cannot be surprised at finding a total ignorance of the principles of architecture, the necessary consequence of such conduct. What they could thus procure in a fit state for immediate application, it was not probable the workmen should bestow labour and time to design for themselves and cut out from the block ; and when it was no longer necessary for them to describe these forms by rule in order to their being cut out from the mass, it was an idle and useless speculation to inquire how they might be produced. That science which is never likely to be called into use, will in general not be acquired or sought for ; and that intelligence which is not kept alive by practice, will soon be forgotten.

In France the early monks themselves actually worked as masons and artificers of all kinds, in the erection of their monasteries †, the most intelligent amongst

\* Felibien, p. 145.

† This was not peculiar to France : in the church of St. Galgano,

them being employed to conduct and superintend such operations, without making use of the assistance of seculars. The superiors often furnished the designs, and acted as directors and surveyors of the work ; and so far was this from degrading the clerical character, that many bishops are found to have been the architects and designers of the churches which they erected. Gregory of Tours mentions one of his predecessors, Leon, bishop of Tours, as an architect, and says he had seen edifices conducted by him. St. Germain, bishop of Paris, designed the church which Childebert built near that city in honour of St. Vincent, since called St. Germain's, from the name of the designer. This bishop was sent by Childebert to Angers, to erect there a church in honour of St. Germain, bishop of Auxerre ; and after finishing that, the same prelate built a monastery at Mans, and some others in different places. St. Avitus, bishop of Clermont, in Auvergne, erected the

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distant about twenty miles from Sienna, which was finished in 1268, more than eighty monks worked.—Della Valle, *Lettere Senesi*, vol. ii. p. 18. None but ecclesiastics and the members of the monastery were employed in rebuilding the church of the Virgin Mary at Dunes in Flanders. They amounted to more than 400 persons, and some of them applied themselves to making the designs, some to the paintings, some to the sculpture, and others to the masons', carpenters', joiners', and locksmiths' work ; and to the other arts dependent on architecture.—Felibien, p. 214. This rebuilding was begun in 1214. Gervase of Canterbury relates, that after the fire in the cathedral of Canterbury in 1174, William de Sens, the architect, having been materially hurt by a fall, committed the care of proceeding with the work till his recovery to a young monk of that foundation, who presided over the masons.—See Gervasius Dorobernensis *inter Decem Scriptores Hist. Angl.* col. 1299.

churches of Notre Dame du Port and St. Genez de Thier, and rebuilt that of St. Anatolia there, which before was in danger of falling. Ferreol, bishop of Limoges, caused many churches in his diocese to be repaired; and St. Dalmatius, bishop of Rhodes, employed himself in architecture, and began to rebuild his cathedral, but pulled it down so often, as not thinking it sufficiently rich, that he left it unfinished at his death. St. Agricola, bishop of Chalons on the Saone, also superintended the erection of the churches which he caused to be built in his diocese, particularly his cathedral, which was adorned with columns, and enriched with marble, mosaic-work, and painting; and this circumstance shows, says Felibien, that the French endeavoured to add beauty to solidity in their edifices. These two last bishops lived in the reign of Chilperic I. and flourished about the year 600; as did also Gregory, bishop of Tours, who rebuilt the church of St. Martin, and several others in his diocese. About this time also Guntran, king of Burgundy, Childebert II. king of Austria, and Chilperic I. turned their attention to the building of churches in their dominions; the most magnificent of which were those which Guntran caused to be built at Chalons upon the Saone, in honour of St. Marcellus; and that which Childebert ordered to be erected near Beauvais, in honour of St. Lucien \*.

The reign of Clotharius II. the son of Chilperic, who, in 614, became sole king of France †, was parti-

\* Felibien, p. 146, &c.

† Spondani Epitome, vol. ii. p. 114.



cularly favourable to the progress of the arts, and of architecture among the rest; because, after having effected his first object, the establishment of peace in his dominions, he directed his next efforts to the civilization of the manners of his subjects, and to the abatement of that rudeness and ferocity which their continual application to the profession of war had a tendency to excite and keep alive. Under a reign so favourable, no one of the arts could fail of making some considerable advances, though but little is known of the history of architecture in that kingdom till Dagobert, the son and successor of Clotharius, built the church of St. Denis, the richness of which Felibien says is sufficient to prove the magnificence which blazed in the monuments of piety left by both those kings \*. This church of St. Denis was begun by Dagobert about 628, and was decorated with a number of marble columns: the vaultings and arcades, all the walls, and even the columns themselves, were covered with rich tapestry, heightened with gold, and with pearls and other precious stones, which, as the building itself was not large, appeared with so much the greater splendour. And this method was practised in most of the churches built at that time †; but no names of architects are known till the eighth century ‡.

On reviewing the buildings of this period, Felibien declares it as his opinion, that the edifices which the Lombards constructed in Italy during the seventh century, about the year 606, ought to be ranked among the most magnificent of the time; particularly the

\* Felibien, p. 156.

† Ibid. p. 158.

‡ Ibid. p. 159.

church of St. John, which queen Theodolinda caused to be built at Monza, twelve miles from Milan; and he adds, that the churches, which, about 672, king Perteric and queen Rodelinda his wife, commanded to be built at Pavia and Perugia, still passed for very sumptuous structures \*.

In England, among the Mercians at least, Felibien observes, numbers of churches and monasteries were built; and that one very considerable, called Medehamstead, was erected about 674. Of this, Sexulphus, abbot of the place, and afterwards bishop of the Mercians, who caused it to be constructed, himself took the principal conduct †. Though it is not intended here to give a complete enumeration of instances, yet, as Felibien has only mentioned Medehamstead, since called Peterborough, and some particulars worthy of attention are to be found respecting other structures, it has been judged necessary to notice some of these.

Matthew of Westminster ‡, under the year 522, speaks of king Arthur as having been at York in that year; and says, that, on observing the desolate state of the ecclesiastical edifices, he summoned a council, in consequence of which he determined to repair the churches throughout the whole island of Britain. This he is said by the same author to have afterwards done; which, if true, must certainly be understood to imply the existence of such erections, even prior to that time ||. Bede,

\* Felibien, p. 160.

† Ibid. p. 160.

‡ Flores Historiarum, fol. Francof. 1601, p. 98.

|| Aurelius, in 488, repaired the churches in Britain, and sent for artificers, masons, 'cæmentarios,' and carpenters, 'lignarios,' for that purpose.—Matthew of Westminster, sub anno 488.

in his Ecclesiastical History, book iv. chap. 4 \*, speaking of the arrival, in 565, of St. Columban from Ireland to preach to the northern Picts, adds, that the southern Picts had long before been converted by Nyma, a bishop of the British nation, who had received a regular education at Rome, the seat of whose bishopric was dignified by a church dedicated to St. Martin, and was, in Bede's time, in the possession of the nation of the Angles. He notices further, that this place belonged to the province of the Bernicii, and was called Ad candidam Casam †; because the bishop had there erected a church of stone, which was then an unusual mode of building among the Britons ‡.

Ethelbert, on his conversion by St. Austin, in 567, applied himself to the building of churches. He laid the foundation of a new one for the monastery of St. Peter and St. Paul, at Canterbury ||, and founded the cathedrals of St. Andrew at Rochester, and St. Paul at London §. In 627, Edwin, king of the Northumbrians, soon after his baptism, founded St. Peter's at York ¶; and about the year 675, Benedict Biscopius

\* *Rerum Britannicarum Scriptores vetustiores*, fol. Lugd. 1587, p. 196.

† Candida Casa, commonly called Whithern, a town of Scotland, under the archbishopric of Glasgow; from which last place it is forty-five miles distant southward, and on the borders of the Irish Sea. See *Car. Stephani Dictionarium Historicum-Geographicum-Poeticum per Nicolaum Lloydum*, 4to. Geneva, 1693.

‡ *Rerum Brit. Scriptores*, p. 196.

|| Bede, lib. i. cap. 33.

§ Bede, lib. iv. cap. 3. Bentham's Preface, in *Essays on Gothic Architecture*, p. 26.

¶ Bede Eccles. Hist. lib. ii. cap. 14. Bentham's Preface, as inserted in *Essays on Gothic Architecture*, p. 22.

began to build St. Peter's church in the monastery of Wermouth, in the vicinity of Gyrwi; and in that year went over to France to engage workmen to construct it after the Roman manner. Some time afterwards, when the building was nearly completed, he sent into France for artificers skilled in the art of glass-making, for the purpose of glazing the windows—an art, till that time, unknown to the inhabitants of Britain \*. About the year 675, Wilfrid, bishop of York, founded the conventual church of Rippon, in Yorkshire †; and about the year 674, that of St. Andrew, at Hexham, in Northumberland ‡. Three other churches at Hexham are also, in like manner, attributed to him. Some of the most skilful builders and artificers of every kind whom he employed on these occasions were procured by him from Canterbury. Other eminent builders and artists he invited or brought over with him from Rome, Italy, France, and other countries; and, according to Malmesbury and Eddius, Wilfrid was eminent for his knowledge and skill in the science of architecture, and was himself the principal director in all these works, in concert with those excellent masters who came from Rome and elsewhere ||. Under his direction also,

\* Bentham's Preface, in *Essays on Gothic Architecture*, p. 31.

† Eddii Vita S. Wilfridi, among the *Historiæ Britannicæ Saxonicæ Anglo-Danicæ Scriptores* XV. a Gale, fol. Oxon. 1691, vol. i. p. 60.

‡ Eddius ubi supra, p. 62. The name of a mason's boy employed in this building was Bodhelm. He had a fall from a scaffold, by which he broke some of his limbs, but was living when Eddius wrote. Ibid. p. 63. Bentham's Preface, in *Essays on Gothic Architecture*, p. 33.

|| Bentham's Preface, in *Essays on Gothic Architecture*, p. 38 and 39.



the conventual church at Ely, erected in 674, is supposed to have been built\*; a sectional view of the remains of which may be seen in Bentham's History of the Cathedral of Ely.

From this time to the reign of the emperor Charlemagne, a period of something more than a century, little material change in architecture seems to have taken place either in France or elsewhere; for though Felibien, p. 161, mentions some buildings within that space, he does not even hint that they differed in any respect from those which had preceded them. He says that several works at Constantinople were undertaken by the emperor Justinian, without particularizing them, and that the walls of the great palace there had been rebuilt by a person named Stephen, after they had fallen down from decay†. But the eighth century, if a judgment may be formed from the comparatively few instances he has produced, seems to have been extremely barren in examples, as the following are the only erections he notices. In Italy, France, or England, not one edifice is mentioned by him; but he says, p. 161, that some considerable structures were raised by the Moors or Arabs, in Africa and Spain, particularly by Abderamen, the founder, and first caliph of Morocco, about the year 700; by Walid Almansor; by Jacob Almansor, about 720; and by Aba-Jaafar Almansor, who, in 762, built, on the ruins of ancient Babylon, the city of Bagdad, at the expense of two millions of gold. In Spain, he adds, Froila and Abderamen, kings of the Moors, had caused some grand buildings to be erected,

\* Bentham's Preface, in *Essays on Gothic Architecture*, p. 41.

† Felibien, p. 161.

the former about 757, in the town of Oviedo, which he founded; and the latter in Cordova. In this last place, he observes, is a mosque, built by Abderamen, about the year 787, which, so late as his own time, served as a church, and was adorned with a number of marble columns almost infinite.

Though Felibien omits all mention of buildings in England within the period of the eighth century, it yet appears from Bede, that in 710, Naiton, king of the Picts, having conceived an intention of erecting a church of stone, sent messengers to Ceolfrid, abbot of the monastery of St. Peter and St. Paul, at Wermouth, requesting that architects might be sent to him who could build him a church according to the Roman manner, of large stone; and that architects for that purpose were sent to him accordingly\*. From this fact, Bentham has inferred that the style of architecture generally prevalent in that age in England, was called the Roman manner, and resembled what was then used at Rome, in Italy, and in other parts of the empire†. The probability certainly is, because there is no evidence to the contrary, that the style of this intended church was meant to be similar to that employed for the same purposes in the rest of Europe, and particularly at Rome, as Naiton professed his intention to follow the customs and discipline of the Roman church. But the passage in the original by no means ascertains the style of the build-

\* Bedæ Ecclesiastica Historia Gentis Anglorum, lib. v. cap. 22. The words of the latter and indeed the most important part of the passage are, "Et architectos sibi mitti petit, qui juxta morem Romanorum ecclesiam de lapide ingente ipsius facerent."

† Bentham's Preface, in Essays on Gothic Architecture, p. 43.

ing, farther than that, like the Roman churches, it was to be constructed of large stone, instead of being composed of small stones of irregular sizes and shapes. In the former of these cases the stones would require squaring, but would then form the joints perfectly true\*; and this was the Roman method here spoken of. In the latter, in which the Roman method had not been pursued, the irregularities, together with the spaces they occasioned, were concealed and filled up by the introduction of mortar and cement. The superiority of the former method is evident; and the distinction between the two, which is fairly deducible from the words of the original passage, shows the absolute necessity of consulting original authors, instead of relying on the conclusions drawn from them by later writers. In 716, Ethelbald founded the abbey of Crowland in Lincolnshire †; and about 719, Ina endowed and erected the larger church at Glastonbury in Somersetshire. William of Malmsbury, in his tract *De Antiquitate Glastoniensis Ecclesiæ* ‡, speaks, p. 310, of the erection of the larger church of the

\* Eddius, in his *Life of Wilfrid*, bishop of York, inserted among the *Historiæ Britannicæ Saxonica Anglo-Danicæ Scriptores* XV. a Gale, describing, p. 62, the church of Hexham, uses these words: “*cujus profunditatem in terra cum domibus mirifice politis lapidibus fundatam.*” It is evident that the words ‘*politis lapidibus*,’ by which the stones employed in the foundations are characterized, can never mean polished stones in the usual sense, but stones smoothed to make the joints fit and correspond with each other more exactly.

† Bentham’s Preface, among *Essays on Gothic Architecture*, p. 43.

‡ Among the *Historiæ Britannicæ Saxonica Anglo-Danicæ Scriptores* XV. a Gale, vol. i. p. 310.

Apostles St. Peter and St. Paul, which he attributes to Ina, king of the West Saxons; and he says, that, as there were several churches there, he shall relate the truth as to their situation and founders. The first and most ancient was erected by twelve disciples of the Apostles St. Philip and St. James; and this was situated on the west side of the others. The second was built by St. David, bishop of St. Asaph, on the east side of the old church, and was dedicated to the Virgin Mary. Twelve men who came from the north part of Britain, and were named Morgan, Cargur, Badmor or Cathmor, Merguid, Morvined, Morehel, Morcant, Boten, Morgan\*, Mortineil, and Glasteing, erected the third, which in like manner was situated on the east side of the old church. The fourth, and largest, was built by king Ina, and dedicated to our Saviour, and the Apostles St. Peter and St. Paul. It was on the eastern side of the others, and founded and endowed for the soul of his brother Mules, who had been burnt at Canterbury by the inhabitants of that city †, though on what occasion does not appear.

In this church, founded by Ina, there is no reason to suppose there was any variation of style from the mode of building before observed; but in addition to this, Malmsbury has inserted a description of a chapel constructed by the direction and at the expense of

\* Morgan, which occurs twice, and Morcant once, are names so nearly alike as to render it doubtful whether one and the same person has not, for the purpose of increasing the number to twelve, been multiplied into three. Should this really have been the case, Malmsbury is not responsible for the error, as he probably only copied it from some earlier authority.

† William of Malmsbury, *ubi supra*, p. 310.



the same king Ina, and consequently about the year 719, so singular as to require particular mention, and so splendid as not only apparently to surpass all former edifices in magnificence, but almost to exceed belief. He has, unfortunately, not given either the dimensions or any particulars of the form or style of this structure; but the following is the substance of his relation, which, extraordinary as it is, he doubtless found in some former writer, or among the papers and evidences belonging to the monastery of Glastonbury, because, a very few lines above, he gives his reader an assurance of his fidelity as an historian.

The same king, says this author, p. 310, also caused a chapel to be constructed of gold and silver, with ornaments and vessels in like manner of gold and silver; and placed it within a larger, for the making of which chapel he gave 2640 pounds of silver. The altar consisted of 264 pounds of gold; the cup, with the paten or dish, of 10 pounds of gold; the incense-pot, of 8 pounds, and 20 marks of gold\*; the candlesticks, of 12 pounds and an half of silver; the covers of the books of the Gospel, of 20 pounds, and 60 marks of gold; the vessels for the water, and the other vessels of the altar, of 17 pounds of gold; the dishes, of 8 pounds of gold; the vessel for the holy water, of 20 pounds of silver; and the image of our Saviour, and of St. Mary and the twelve Apostles, of 175 pounds of silver, and 38 pounds of gold. The palls for the altar and the priests' vestments were skilfully interwoven all over with gold

\* The expression in the original is, *xx mancis auri*. Du Fresne, in his Glossary, says, *Mancus* is a mark, a certain weight of gold or silver.

and precious stones ; and this treasure, in honour of the Virgin Mary, the king bestowed upon the monastery of Glastonbury.

The emperor Charlemagne, who began his reign as king of France in 768 \*, and as emperor of the West in 801, in which last situation he reigned thirteen years †, is said by Felibien, p. 162, to have surpassed all the former princes in magnificence ; for France, Italy, Germany, and the other places dependent on his empire, still, says he, preserve many remains of buildings which he caused to be erected in each. But among all these, no one is more worthy of attention than the very magnificent church which he built at Aix, and from which that place afterwards obtained the surname of La Chapelle. Some authors have said that the building was constructed according to the style of the antique, and that, to render it more conformable to the edifices of the ancient Romans, a number of antique columns were employed, which the emperor caused to be transported from Ravenna to Aix ‡. But the reputation of this structure for beauty must, it is believed, rest on the testimony of those who have commended it, as sufficient materials for deciding the point on other grounds have not been found at this time existing.

Mr. King, in his *Munimenta Antiqua*, vol. iii. p. 164, speaking of Chilham castle in Kent, and of the appearance of something like pointed arches in the lower apartment, says, he had been furnished with an

\* *Helvici Chronologia*, p. 14.

† *Ibid.* p. 116.

‡ *Felibien*, p. 163. *Ciampini*, vol. ii. p. 130, 131.

impression from a gold coin of Charlemagne, on which, in a representation of the church of Aix-la-Chapelle, appears the pointed arch. But, adds he, as this coin or medal has no date, one cannot but doubt a little as to its being so old as the years 800, or 814, the æra of his reign, although the inscription is, “*Carolus Magnus Rom. Imper. et Francor. Rex, Fundator Templi S. Mariæ Virginis Aquisgrani.*”

If Mr. King could have rejected this coin, as he appears to have done, merely because it wanted a date, he certainly must have been extremely ill-informed on the subject of coins, as it does not appear to have been the practice to put any such distinction on those either of this country, France, or Italy, till a much later period, or, indeed, till times comparatively very modern. Of all the coins of the French kings from Philip IV. who reigned in 1302, to Henry II. as represented by Du Fresne, in his *Glossarium ad Scriptores mediæ & infimæ Latinitatis*, art. *Moneta*, only two of this latter sovereign have any date, and those bear the years 1549 and 1552. As the coins so late as 1302 were without a date, it is against all reason to expect that such as were struck five hundred years before should have had one; and for any thing, therefore, that appears to the contrary, the coin may be, and apparently is, genuine. If so, as Charlemagne became emperor in 801, and died in 813\*, it must have been struck within that period; and it certainly affords strong reason for thinking that the church of Aix-la-Chapelle contained pointed arches.

\* *Helvici Chronologia*, p. 116.

On some such evidence as this it might perhaps have been, that Milizia, p. 139, has placed the change in architecture from the massy and ponderous, to the light and delicate style, in the reign of Charlemagne; but this supposition is merely conjecture, as he has not mentioned his authority for the fact.

The rebuilding of the palace called Ingelheim, near Mayence, which had been of wood, and burnt about the year 813, was commenced but a short time before the death of that prince. This, together with that of Nimeguen on the Wesel, and many others which Charlemagne caused to be built, were also considered as some of the most beautiful structures which had been erected for more than four centuries\*.

Paulus Æmylius, in his life of Charlemagne, says, that there is not a place in Italy where that emperor has not left singular marks of his magnificence. He rebuilt Florence, which before had been entirely destroyed, and contributed largely to the magnificence of the works which the popes Adrian I. and Leo III. caused to be executed at Rome, where the walls which surround that city, the aqueducts, and a number of churches, were rebuilt. Among these was the church of St. Paul, the execution and entire conduct of which Adrian confided to one of his officers, named Januarius. Besides all this, Charlemagne ordered the enlargement of the cities in all the provinces of his realm, commanded that they should be surrounded with walls and bulwarks, and that castles and fortresses should be erected †.

\* Felibien, p. 163.

† Ibid. p. 164.



## CHAPTER IV.

*Architecture in the Reign of Charlemagne—Light and delicate Gothic Style supposed by Milizia to be then introduced—Practice of stating Facts, without assigning Authorities for them, censured—Architecture among the Arabs in the eighth Century—Number of Erections, not to be admitted as Proof of Improvement, instead of individual Excellence—Church of the Holy Sepulchre at Jerusalem rebuilt in the ninth Century—Buildings in France in the Reign of Louis the Pious—Cathedral of Rheims rebuilt in the ninth Century—Architecture in France in the Reign of Louis the Pious, and the other Kings of the Race of Charlemagne—Ravages in France by the Norman Danes—Buildings in France under Charles the Bald—Structures in Italy in the ninth Century—St. Mark's Church at Venice rebuilt—Edifices at Rome in the ninth Century, and their Character—Erections in England in the ninth Century.*

CONSIDERING the multitudes of these erections by Charlemagne, it might have been matter of astonishment, where the necessary funds for the payment of the workmen could have been procured, if it had not been learnt that the expenses were wholly defrayed out of the immense quantities of gold and silver, and other articles of value, found in the camp of the Huns, after

their defeat by him in the year 788 \*. For all that this barbarous nation had amassed from the spoils of the several countries which they had ravaged, being collected into that one spot for the more easy conveyance of it into their own country, fell at once, in consequence of their defeat, into the hands of the conqueror. Of this the amount was so great, that it raised France throughout to a state of abundant opulence, and enabled Charlemagne, without imposing any taxes on his subjects, to execute all the great works attributed to him, and to leave besides, at his death in 814, an almost infinite quantity of wealth †.

No sovereign, says Milizia, p. 139, perhaps ever employed more builders than Charlemagne, who caused to be erected in his vast dominions a multitude of grand edifices of all kinds; but of no one architect is the name preserved. Nor does Milizia appear to have thought that this number of instances of its use was in any manner serviceable to the science of architecture, or productive of improvement; as, on the contrary, he asserts, that architecture, instead of improving, became considerably worse, passing from the massy and heavy to an excess of lightness and caprice, with an extraordinary profusion of ornament.

For this latter fact, a very important one, if it could be established, as it would decidedly fix the period of a momentous change in the style of architecture, the supposed evidence has been already mentioned. But Milizia has, according to his usual custom, cited no authority, nor has he mentioned any instance on

\* Spondani Epitome, vol. ii. p. 228.

† Felibien, p. 166.

which he founded his opinion. Thus is the reader precluded from the power of ascertaining, by an examination of the evidence, its accuracy or fallacy; but he is called upon to accept the testimony of a witness who did not live till some centuries after the events he relates, and to give his assent to the circumstance as a fact, without previously knowing whether it is entitled to credit. In the case of Milizia, this conduct is still more reprehensible and unreasonable, as the first edition of his work, which was printed in quarto at Rome in 1768, and contains the passage in question, was an anonymous publication, though his name has been added in subsequent impressions.

The practice of thus advancing assertions without assigning any authority is now become so common as to require to be noticed and reprobated by all such as wish for the promotion and dissemination of accurate intelligence. To contribute to that end, and, if possible, to stop its career, would be a laudable aim, and, if successful, an useful undertaking. It can never be attended with benefit even to the author himself, with whom at best it is only the refuge of idleness; but from the reader it is entitled to no pardon or indulgence, as it necessarily produces great mischief. In works thus conducted, it is impossible to distinguish between established fact and mere conjecture; between the opinions of former writers and the discoveries of the then present author; and between conjectures already refuted, and those now first advanced. Such a method is always a reasonable ground for suspicion in the mind of the reader, which, on examination, is often converted into certainty, that evidence in support

of the position is not to be found \* ; that the author's other assertions rest on no better a foundation ; and that the motive for concealing the evidence was the hope of thus securing them against a detection of their fallacy.

To the French, whose object in writing, especially of late years, seems to be a wish to exhibit themselves, and render the style of their works agreeable to the reader, rather than to convey any useful information, this practice, which is particularly observable in their productions, is supposed to have been originally owing. Their example, though extremely prejudicial, has been implicitly followed, not only in Italy, as is evident in the instance of Milizia, but in this country also—and a very great evil it is. More than half the difficulties in the discussion of any question of science, arise from the number of unfounded assertions necessary to be refuted, which are so far from assisting in the elucidation, that they create additional impediments ; and the sentiments of that author are by no means likely to be correct, who is unable or unwilling to produce his authorities. To convey correct information every scholar knows to be the real use and value of books : to this mode of preserving and communicating knowledge, all arts and sciences are indebted for their present existence ; and every man of sense, who has an adequate idea of the proper employment and value of time, will consider it not only an useless but pernicious labour to peruse a work, the contents of which he must endeavour to efface from his mind as soon as it has received them,

\* Instances of this have actually occurred, and could, if necessary, be mentioned.



if he ever intends that his own opinions should be entitled to any respect.

In excuse for this practice, a desire to avoid pedantry, and to escape censure for an ostentatious display of reading and intelligence, is sometimes alleged; and it may perhaps be further urged, that where authorities have been fairly produced, subsequent writers have, in some instances, cited those authorities as if they had been the result of their own discoveries, without acknowledging their obligations to the work which had supplied them with the references. That instances of such disingenuous conduct have sometimes occurred, is too true; and almost every man's experience might furnish some: but whenever this mode has been pursued, it has always been detected by the majority and most intelligent of the readers, and has presently become known as the character of the work. Nor indeed is it ever likely to escape observation, since it is not probable that those who would be induced to read one work, on a subject in which they were interested, should omit to consult also the other principal authors who had written on it. After all, should any such case of successful concealment arise, it would be a matter of no difficulty to point out in print whence the references had been obtained, and thus to expose the palpable plagiarism. But admitting all this as a justifiable reason, which it evidently is not, does the present mode prevent the evil against which it is intended to provide? Is the author who cites no authority himself in any respect more secure that those who borrow from him, will, in their writings, refer by name to his work? and not

rather follow his example in producing no voucher ? and can his own fame be increased or advanced by the publication of a book which those who are seeking for intelligence on that very point, think it yet not safe to cite, for fear of being led into error ? The fact is, that no intelligence of any value can be obtained, without consulting the genuine authorities ; and before the reader's assent can be justly required, it ought to be shown that the proper sources of information have been applied to. With those who wish to be accurate, the necessary conduct on such occasions therefore is, to abstain from the use of all books conducted on this plan of concealment, as dangerous and likely to mislead them ; and on this principle the author of the present work has studiously avoided publications, which, had their authorities been disclosed, he might perhaps have been induced to have cited by name, as containing apparently valuable information, but which, for want of that stamp of authenticity, he thought could not, without danger, be relied on \*.

After noticing that in the Greek empire architecture entirely fell, because of the miserable state to which the emperors of Constantinople were reduced during the greater part of the eighth and the beginning of the ninth century, Felibien, p. 168, mentions, that, on the contrary, the dominion of the Arabs extended almost to the gates of Constantinople, and that several of the caliphs proved themselves capable of great undertakings.

\* The only exception to this rule has been in the case of Milizia himself, from whose book, as the reader will perceive by the references to it, such facts have been taken, as have either been confirmed by other authors, or have had all the apparent marks of probability.

Among such he enumerates the city of Fez in Africa, founded about 793, by a prince named Idris; and another city, the name of which he has not inserted, erected by one of the sons of that prince, very near that founded by his father. Many other works of importance were also caused to be built by the Miramolins or caliphs of Bagdad and Morocco: but it is sufficient to say, that Aaron, nephew of Aba-Jaafar Almansor before named, so much cultivated the sciences and fine arts, that, in order to converse on that subject, he had always near his person an hundred learned men whom he chose and procured from different places \*.

Buildings like these, it is evident, could contribute nothing to the promotion of science. Mere habitations did not admit of the display of architectural skill; and importance, arising from number and multitude, is a perfectly distinct consideration from that which is the consequence of excellence in any particular instance. By the erection of one such edifice as the Pantheon and St. Peter's church at Rome, St. Paul's, London, the banqueting-house at Whitehall, the cathedral of Milan in Italy, Westminster abbey, or York minster, more honour and benefit is conferred on the science of architecture than by the building of Constantinople by Constantine, or by all the erections at Ravenna, and in the other cities of Italy and France, by Theodoric king of the Goths, or the emperor Charlemagne. These considerations, though manifestly of great weight, in ascertaining the progress or decay of architectural knowledge, and applicable to all the nume-

\* Felibien, p. 169.

rous examples of the erection of whole cities, which occur in the history of architecture, have never as yet met with the attention which they merit; and it is therefore necessary thus to warn the reader against admitting number of instances, instead of individual excellence, as the rule for his judgment.

It appears that this prince Aaron had contracted a friendship with Charlemagne, to whom he sent a very splendid embassy, accompanying it with a multitude of valuable presents; and that, in consequence of his respect for that emperor, he, in 813, permitted the church of the Holy Sepulchre at Jerusalem to be rebuilt\*, the care of which rebuilding was accordingly committed to Thomas, patriarch of Jerusalem, who caused the structure to be re-erected on a larger scale and more magnificently than it had existed before †.

Almamon, son of Aaron, is mentioned merely as having erected a castle on the Nile, and a very high column to mark the rise of the river in its overflowings‡. Of this last, usually called, from its use, the Nilometer, a cut is given by Norden, plate 26. But he also permitted some of his officers who were Christians, to build churches near the places where he resided §.

One of the principal objects recommended by Charlemagne to his sons, when, some years before his death, he transferred to them a portion of his dominions, was a sedulous care and attention to the repair and em-

\* Helvicus, in his Chronology, under the year 805, speaking of Charlemagne, says, that Aaron, king of the Saracens, gave to Charlemagne Mount Calvary at Jerusalem, and the sepulchre of our Saviour. For this he cites Eginhard.—*Helvici Chronologia*, p. 116.

† Felibien, p. 168.

‡ Ibid. p. 169.

§ Ibid. p. 170.



bellishment with new decorations of all the places dependent on them; and this precept was exactly followed accordingly by his sons, Pepin, king of Italy, and Louis, king of Aquitain, both of whom caused a number of edifices to be built or repaired in their kingdoms \*. No erections by the former of these are enumerated by Felibien. The latter survived his brother, and succeeded his father Charlemagne both in the kingdom of France and the empire of the West, and was afterwards known by the appellations of Louis the Pious and Louis the Debonnaire. To him are attributed the following churches and monasteries; St. Philibert, St. Florent on the Loire, Karoffe, Couches, St. Maixant, Menat, Manlieu in Auvergne, Moissac, St. Savin in Poitou, Noaille, St. Theotfroy, St. Paixant, Solomnac a league from Limoges, St. Mary, St. Rade-gond at Agnane, St. Laurence, Caunes, and several other churches. He also enjoined the clergy to take the necessary care of the churches and buildings belonging to them, charging all the prelates and beneficed clergy of the realm, as Charlemagne had before also done, themselves to inspect and superintend works of that sort †.

Under the reign of this prince, which commenced in 814, and ended in 840 ‡, Ebon, bishop of Rheims, undertook to rebuild the cathedral of his diocese. Those who have written its history, say that a person named Ruinald, the king's architect, had the conduct of the work, and that he used no other materials than what he procured from the ancient walls of that city,

\* Felibien, p. 172.

† Ibid. 172.

‡ Helvici Chronologia, p. 116.

the greater part of which he pulled down. Felibien, who relates this, also adds, that, in his time, some letters of Louis were still in existence, by which he granted to the members of the church of Rheims permission to make use of his architect Rumald during the whole of his life, and to pull down the walls of the city for the purpose of obtaining materials. This church was not completed till the time of bishop Hincmar, about 840, who employed all his care, as Ebon his predecessor had before done, to render it the most magnificent that then existed \*. No particulars relating to the structure or style of this edifice have been found, nor are any ideas to be obtained from the present church, as that has been rebuilt; but it appears that Hincmar had enriched it with a multitude of very precious ornaments, particularly described by Frodouard, who saw the fabric in its original state, before the fire in 1210, and the subsequent repair †.

Milizia remarks of this church, that it has been celebrated as the most magnificent of the time; but that all the descriptions refer to the altar, the covering of which was of massy gold studded with gems, to a statue of the Virgin of gold also, and to a great quantity of utensils for sacred uses of gold and silver; but adds very truly, that this kind of richness is entirely different from architectural magnificence‡. The accounts, it must

\* Felibien, p. 173.

† See Marlot, *Metropolis Remensis Historia*, fol. Insulis, 1666, vol. i. p. 394.

‡ Milizia, p. 139. Felibien, p. 174, says this prelate enriched it with a number of precious ornaments, for that he caused to be made a covering for the altar of gold ornamented with jewels, an image of

be confessed, are certainly extremely defective, as omitting to notice a very important particular, the style of architecture of this church, and in what its peculiar excellence and magnificence consisted\*.

Towards the close of the reign of Louis the Pious, and through those of the other kings of the race of Charlemagne, which seem to have extended to about the year 911 †, architecture in France appears to have been in a deplorable state; and so far was this period from contributing either to the increase of the number, or the repair of such as had fallen to decay, that, on

the Virgin of gold to stand on the altar, a large cup of the same metal, which was afterwards given to the Normans to prevent their pillaging the city of Rheims; and to these he added several shrines, lamps of silver, chandeliers, coronets, and some tapestry.

\* Marlot, in his *Metropolis Remensis Historia*, vol. ii. p. 470, says, speaking of this church, that the vaulting and piers, as in other churches, were in this also of wood, which not long before had been destroyed by fire. He adds, that Wandelin, in his *Glossarium Salicum*, art. *Basilica*, had asserted, that, till the year 1000, almost all the monasteries and churches in France were of wood. That the roof of early ecclesiastical edifices might, before the mode of forming stone vaultings of sufficient strength was known, have been constructed of timber, is very probable; but that any other part, columns or piers, for instance, were of that material, is wholly incredible. When we read, therefore, of such buildings as destroyed by fire, the reasonable conclusion is, that the roof was wholly consumed, and the lead with which the roof was covered melted. The other parts, which were of stone, might, on occasion of similar accidents, have been much injured, or in part destroyed, by the falling of the beams and timbers of which the roof consisted: but, as stone is not a combustible material, the fire could no otherwise have operated than perhaps by forcing the mortar or cement to crumble out of some of the joints.

† *Helvici Chronologia*, p. 120.

the contrary, a multitude of the most sumptuous edifices were destroyed by the Norman Danes who had entered France under Hasteing their leader. Of this number were the church of St. Owen at Rouen, which they demolished in 842, and the cathedral of Chartres, burnt by them, together with that city, in 850. A few years after this, they destroyed the church and monastery of St. Genevieve at Paris, and set fire several times to the church and abbey of St. Germain des Prez. They also reduced to ruins the church of St. Martin at Tours, together with several other churches: and the Saracens, who had entered France in another part, pillaged also the abbey of Mount St. Michael, and were guilty of extraordinary ravages and cruelties\*.

While these invaders were employing all methods for the destruction of France, king Charles the Bald exerted his efforts to put the several cities into a state capable of defence, as well by the erection of walls and towers, as by placing in them strong garrisons, and furnishing them with the necessary machines and implements for resistance; but although this object, and the troubles in which he was involved, necessarily required the principal portion of his attention, he still found the means of extending some share of it to architecture also.

Among the most considerable edifices erected in France under Charles the Bald, must be reckoned the church and abbey of Notre Dame, since called St. Cornille, which, in 876, this prince caused to be built at Compeigne, with several other edifices of the same

\* Felibien, p. 174.



city. He also caused the monastery of St. Benignus at Dijon to be rebuilt; and several other structures were raised in his time and in that of his successors, as well by them as by some of the nobility who had distinguished themselves by the power which they had acquired in the kingdom. The principal of these were Baldwin the first earl of Flanders, and his descendants; Hasteing, the chief of the Normans, who caused the castle of Blois to be built, after Charles the Bald had created him Comte de Chartres; and the Norman princes, who began to encourage the polite arts as soon as they were established in the province since called Normandy. It may therefore be truly said, that, notwithstanding the troubles with which France was agitated during more than two centuries, considerably greater expense was bestowed in that kingdom in the erection of buildings than in all the other neighbouring nations\*.

In Italy, and particularly at Venice, some new buildings were also undertaken. About the year 820, Angelo Particiatio, tenth Doge of Venice, caused the ducal palace to be erected, and constructed besides in Venice the churches of St. Zachary, St. Lawrence, St. Severus, and that of St. Hilary, in which, in 827, he was buried. After his death, his sons Justinian and John caused the church of St. Mark the Evangelist to be built, the body of which saint had been brought from Alexandria to Venice by some Venetian merchants in 828; and there is scarcely any one of the Doges their successors who has not signalized his reign by the erection of new buildings, as well as by new

\* Felibien, p. 176.

conquests. For Pietro Tradonico, about 860, ordered the church of St. Paul to be built. Orso Particiatio, about 880, caused an enlargement of the city, and Pietro Tribuno, the seventeenth Doge, about the year 900, fortified it with a wall from the castle to the church of St. Mary, surnamed Zebenico. Lastly, Pietro Orseolo, the twenty-third Doge, who died in 978, caused the church of St. Mark to be repaired by some Greek architects, whose names are unknown, which, together with the ducal palace, and more than three hundred houses, had been burnt in the time of Pietro Candiano his predecessor. But none of these edifices were comparable, says Felibien, to those which the French had constructed from the commencement of the reign of Charlemagne\*.

Vasari, vol. i. p. 225, speaking of this church of St. Mark at Venice, says that it was begun under the Doges Justinian and John Particiaco, when the body of that Evangelist was brought from Alexandria to Venice; that, after several fires, in which the ducal palace and church were much injured, it was at length rebuilt on the same foundations in the Greek manner, in which we now see it; that it was erected at great expense, and by the labour of many architects, in the time of the Doge Domenico Selvo, and in the year 973; and that its columns were procured by that Doge from such other places as could furnish them. He adds further, that this building continued to proceed till the year 1140, Pietro Polano being then Doge, and that it was conducted according to the designs of several masters, all Greeks. Della Valle has,

\* Felibien, p. 176.

from a former edition, inserted a note, in which it is remarked, that, instead of the year 973, other authors say it was erected in 1071; and it is certain that Vasari is mistaken, either as to the year or the name of the Doge: for Domenico Selvo was not Doge till 1059, and died in 1072\*. He is also in a similar error as to the date 1140: for Pietro Polano was Doge only from 1118 to 1136, and Domenico Morosini, whom he has not mentioned, from 1136 to 1143 †. This passage in Vasari it was thought necessary thus to notice, as a caution against supposing the present church of St. Mark at Venice of so early an age as he assigns to it.

Even the buildings erected by the Popes Pascal I. Gregory IV. Sergius II. and Leo IV. were, in the opinion of Felibien, preferable to those of the Venetians; and stating that fact as he does in the singular mode here adopted from him, it should seem that he thought these pontifical erections far from excellent. He, however, particularizes them as follows: Pascal, about the year 820, ordered the erection of a church at Rome in honour of St. Praxedes, near an ancient chapel which bore the same name, and was almost in ruins. By his order also the church of St. Mary the Great was repaired, and that of St. Cecilia was built, which last he adorned with marble and enriched with costly decorations. Gregory caused several churches to be rebuilt and repaired, about the year 830, and among others that into which he removed the body of St. Gregory, and which he embellished with many ornaments. Sergius, about the year

\* Heylyn's *Cosmography*, edit. 1703, p. 106.

† Ibid.

845, ordered the church of St. Silvester and St. Martin to be repaired, and commanded that adjoining this last a monastery should be erected in honour of St. Peter and St. Paul. Pope Leo surpassed in magnificence most of the princes of his time, and not only finished the church of St. Martin and St. Silvester, which his predecessor had left imperfect, but repaired also the walls and gates of Rome, and built fifteen large towers as a defence to the principal entrances, by reason of which he, about the year 852, gave his name to a part of the city. This is said to have been the Pope who caused the church of St. Mary in Via Nova to be built, and a tower to be added to St. Peter's in the Vatican\*.

The troubles with which the popes were surrounded almost immediately after the death of Leo IV. and the irregularities of the greater part of those who succeeded this pontiff down to the end of the tenth century, were the reasons why nothing considerable was done at Rome during this long interval. Under the pontificate of Benedict III. and those of Nicholas I. Formosus I. and Martin III. many instances of repairs of churches, and several other sorts of edifices, occur, especially during that of Nicholas I.; who took extraordinary pains to repair in Rome, all that had been damaged by the inundations which happened in his time†.

The inhabitants of the Britannic isles, and also the Germans, in like manner merit to be reckoned among those who about this time erected edifices of importance either for beauty or magnificence. In the His-

\* Felibien, p. 179.

† Ibid. p. 180.



tory of England, as related by Matthew of Westminster, under the year 888, we are informed, that the whole amount of the income of Elfrid, king of the West Saxons, was divided into two. One of these halves was then subdivided into three: the first portion of which was applied to the payment of his army, the second to defray the wages of a multitude of artists, whom he employed as being skilful in every kind of work then known in the world; and the third was bestowed on strangers who flocked to him from all parts. The other half of his income was likewise subdivided into three portions, of which the first was allotted to the poor, the second to the monasteries which he had founded, and the third to a school or college, the members of which he had collected together from France, and other more remote countries, and to the clergy and learned men in proportion to their skill. Felibien, who refers to Matthew of Westminster, says the king employed the half of one third of his revenue in the payment of a number of artists, whom he had engaged in a variety of works, and the other half in maintaining several colleges which he had built, and in rewarding a multitude of men of learning whom he had caused to come to him from France, and other places in Europe, for the cultivation of the sciences and polite arts in his kingdom †. But it does not appear that any part of all this was expended in architecture; and Matthew of Westminster's account is incredible; because he here gives the apportionment

\* Flores Historiarum, fol. Francof. 1601, p. 176.

† Felibien, p. 181.

of the whole income, in which there is no provision for the expenses of the king's household, nor any branch within which those could be included.

Edward, surnamed the Elder, king of the Anglo-Saxons, caused, says Felibien, p. 181, on the authority of Matthew of Westminster, many towns, castles, and some churches to be erected, about the years 912, 917, and 920; and Elfreda, his sister, queen of the Mercians, about 912, 915, and 916, occasioned so great a number of various edifices to be built in her dominions, that her reign is no less famous for her magnificence than for her prudence, piety, and justice. But of these structures he points out none by name; and his references, by the dates, to Matthew of Westminster, produce no instances as to Edward but the towns of Hertford and Witham in Essex, erected in 912; the town and castle of Malden, built by him also, in 917; and in 920, the towns of Tealwell and Manchester, which he then repaired \*. Of Elfreda's erections, his references in the same manner only notice the castle at Serengate, built in 913, and another repaired at Brigges, on the west side of the Severn, in the same year; the villages of Fredesbyri and Wartham, erected in 915, and those of Cherenburch, Weadburch, and Runcof, in 916 †. Other instances of edifices by both these persons might be produced from Matthew of Westminster, but none of either sort appear capable of improving, in any respect, the style of architecture then in use.

\* See Matthew of Westminster under those years.

† Ibid.

Edgar and Ethelred, the successors of Edwin, ordered in their times the construction of a multitude of buildings, principally churches and monasteries; many particulars relating to which, Felibien says, may be learnt from the *Monasticon Anglicanum*, though nothing is there to be found as to the names of the workmen who erected them \*.

\* Felibien, p. 182.

## CHAPTER V.

*Buildings in Germany in the ninth Century—Erections in Spain—at Constantinople—Erroneous Opinion as to the End of the World, and its Effects—Churches in all Parts of Europe repaired—Fresh Erections—St. Miniato at Florence—Dome of Pisa—contains the pointed Arch—Objections to early Instances of Buildings on the Ground of Re-erection, not to be admitted without previous Proof of the Fact of Re-erection—Reasons for the Introduction of the pointed Arch—Instances of it so early as the fifth Century—Its Construction known in the Time of Euclid—Baptistery of Pisa—Some Particulars of its Style—Other Buildings in Italy—General Character of Edifices in Italy down to 1250—Those in France in the tenth and eleventh Centuries—Cathedral of Chartres—Description of it—Other Structures in France in the Reign of King Robert.*

As to buildings in Germany, says Felibien, Stengelius has remarked, that in the tenth century the monastery of the church of Einsidlen, otherwise called the Hermitage of the Virgin Mary, in the mountains of Switzerland, was erected. Eberhard, the founder, and first superior of the place, began this work about the year 945; and for some time took the conduct of it on himself; but this he afterwards wholly confided to a person named Thietland, apparently an ecclesiastic,



and a member of that endowment, who is represented as a man of wisdom, extremely skilful in all that regards architecture, and whom Eberhard at length chose for his successor \*.

Gebhard II. bishop of Constance in Suabia, began, in 983, to forward the erection of the church of Peterhausen, opposite to his episcopal city on the other side of the Rhine. In the progress of the work the principal conductor of it had the misfortune to fall from a scaffold, which suddenly gave way under him, by which accident he was dangerously wounded; but notwithstanding this, he recovered from the fall, and lived to finish the church, which is esteemed one of the most considerable in Suabia, being vaulted with stone, and ornamented with paintings †.

Of Spain it may be said, that, though one of those places of Europe in which the greatest number of buildings have been erected, it is yet also the spot where more of them have been destroyed. The continual wars between the Moors and Spaniards, and the frequent changes which the fate of arms produced between the two nations, have been the cause of the ruin of a multitude of fabrics, which each of these contending nations had caused to be built during the intervals of success with which fortune alternately favoured them. What praise is due to those of the Moors, Felibien says, he has elsewhere shown; but that as to those of the Spaniards, or, to speak more correctly, those of the Goths, who had assumed the name of the native inhabitants of the country, there

\* Felibien, p. 182.

† Ibid.

are none so worthy of attention as those which were constructed under the reign of Alphonso the Great, king of Leon and Castile. That prince was the first who ordered the church of St. James, in Gallicia, to be built about the year 920; and among many other monuments of his piety and magnificence, the cathedral church of Oviedo was in high estimation. This he had caused to be rebuilt; and in the erection of it expended two hundred thousand crowns of gold, the amount of the ransom of Aboalim, general of the Moors, taken prisoner by him \*.

As soon as the polite arts had begun to receive support at Constantinople from the exertions and reputation of Leo the Mathematician, who flourished in the time of Alinamon, the son of Aaron, caliph of Bagdad, and consequently was nearly contemporary with Charlemaigne †, that city began to be ornamented with new buildings. The emperor Basil of Macedonia, whose reign commenced about the year 867, and extended to about 886 ‡, caused all such erections to be repaired, as had been injured by war, earthquakes, or fires; and, among others, the church of Santa Sophia, which Felibien, p. 184, says, was ready to fall §; the great palace, and a number of other edifices, an enumeration of which may be seen in Cedrenus ||. Leo ¶, surnamed the Philosopher, the son and successor

\* Felibien, p. 183.

† See Felibien, p. 170.

‡ Helvici Chronologia, p. 118.

§ This might be true of a part, and that part be rebuilt; but it is by no means to be understood as the state of the whole building.

|| Hist. Compend.

¶ He came to the throne in the year 887, and died in 910.—Helvici, p. 120, 121.

of Basil, caused several very magnificent churches to be erected. His son, Constantine Porphyrogenitus, had no less passion, says Felibien, for great undertakings; but that author does not mention any instances of buildings in his time. He speaks indeed of a library as fitted up, and new public schools as established by him; but it does not appear that they were fresh erections. By the endeavours of this emperor, he also says that the sciences and arts were so far advanced, that they might speedily have been brought to perfection, if his successors had continued to exert the same efforts; but that, on the contrary, these latter princes entirely neglected them, at least to the end of the succeeding century \*.

Towards the latter part of the tenth century an opinion had been advanced by some persons, that the world was intended to exist no longer than one thousand years from the birth of our Saviour, and that the year 1001 would therefore be its last †. Abbo, abbot of Fleury, who lived in the same century, a man of

\* Felibien, p. 184.

† On looking into Mr. Whittington's Historical Survey of the ecclesiastical Antiquities of France, soon after its first publication, the same fact was also found noticed by him; but this part of the present work had been written some time before that book appeared, and without the knowledge that any such was intended. It has been judged requisite to remark this accidental coincidence as a caution against supposing, should any instances occur of a similar agreement between this work and any other which has appeared, that the passages in this must necessarily be borrowed. The authorities really used on the present occasion are fairly mentioned; but another writer who, perhaps, never saw the books here used, may probably sometimes have obtained the same fact from the writings of authors which had not been consulted for the purpose of this publication.

great learning and sanctity, relates, in his Apology to Robert, King of France, that he, when a boy, had heard a sermon in a church in Paris, in which it was asserted that, immediately after the completion of one thousand years, Anti-christ would come, and that not long after the universal judgment would succeed: he adds, also, that a report had prevailed throughout the world, that when the Annunciation of the Virgin should happen on Good Friday, without all doubt it would be the end of world \*: but that he, on the authority of the Gospel, the Apocalypse, and the book of Daniel, had exerted his efforts to oppose this persuasion †. Jerusalem, it was supposed, would be the spot of our Saviour's re-appearance on earth; and in consequence of this expectation, multitudes of persons of all ranks and of both sexes had, as the period predicted more nearly approached, been induced to resort thither in order to await the final consummation of all things.

Under this expectation, which, if well founded, would have rendered any other conduct useless, the

\* In the years 970, 981, and 992, Easter-day was the 27th of March; Good Friday was, therefore, the 25th. It had happened so in 886, 897, and 908; but this circumstance did not occur again till 1089. See Du Fresne, *Glossarium ad Scriptores mediæ et infimæ Latinitatis*, fol. Francof. ad Mænum, 1681, tom. i. p. 221, &c. In 1001 Easter-day was the 3d of April, *ibid.* In the year 1000 it was the 31st of March, *ibid.* But how this report can be applied to justify the above conclusion as to the end of the world, seems wholly incomprehensible; because it is evident, from the authorities just cited, that in neither of the years 1000 or 1001 were Good Friday and the 25th of March the same day.

† Spondani *Epitome*, vol. ii. p. 378.



churches and other religious edifices, which, at various periods, had been erected in most parts of Europe, had been permitted from time to time to fall, for want of repair, almost universally into a state of decay. But in the year 1003, when the time predicted had elapsed without the accomplishment of the prophecy, the Christians in all parts of the world began to recover from their panic, and vigorously applied themselves to the repair of the old and the erection of new churches and monasteries. Their now ruinous state certainly required such exertions to ensure them from falling; and it is a fact, that about this time, in all parts of the Christian world, but particularly in Italy and France, most if not all of the churches and other ecclesiastical structures were either rebuilt or repaired\*.

Of these fresh erections, the church of St. Miniato on the mount at Florence, mentioned by Vasari, vol. i. p. 226, appears to have been one of the earliest. He terms it a most beautiful church, and says it was erected in 1013, in the time of M. Alibrando, who was both a citizen and bishop of Florence. In his opinion it also proves that architecture had acquired something of vigour; for, besides the marble ornaments within and without, the front of it manifested that the Tuscan architects endeavoured, as well as they were able, to imitate in the doors, windows, columns, arches, and cornices, the beautiful antique, the knowledge of which they had in part obtained, as he says, from the very ancient church of St. John in that city. To all this he adds, that painting was improving in an equal degree, as is

\* Spondani Epitome, vol. ii. p. 392.

evident from the mosaic in the larger chapel of this church of St. Miniato \*.

From these beginnings, says Vasari, the arts began, by degrees, to improve in Tuscany; which is further shown, he remarks, from the dome at Pisa, erected by the Pisans in the year 1016. In that age it was a vast undertaking to construct the body of a church like this, consisting of five naves, and composed of marble within and without. This church, which was erected from the design of Buschetto of Dulichium, a Greek architect of great skill at that period, was constructed and ornamented with the spoils of other buildings, which the Pisans, who were then arrived at the height of their greatness, had imported, by sea, from several distant places abroad, as the columns, bases, capitals, cornices, and other fragments of stone of all sorts, sufficiently declare. As these materials were of a variety of sizes, Buschetto has exhibited much judgment and science in accommodating them to each other, and in settling the distribution of all the parts of the building, which is extremely well disposed within and without †. Perhaps of all that could be named, this instance of the dome of Pisa may be one of the most important to the present inquiry, because the vaultings of the side-aisles of the nave are exactly of that kind which the Italians call *Volta di sesto acuto* ‡, or, in other words, constructed with the pointed arch, which is now generally, though erroneously, denominated the Gothic.

Against all early instances of the use of the pointed

\* Vasari, vol. i. p. 226.

† Ibid.

‡ Milizia, p. 140.

arch, the advocates for the idea of a later introduction are ever ready to make one general objection. They say, these parts are either of more modern erection originally, or have since been rebuilt; but they do not produce evidence of any such circumstance in the particular instance. Because, in some cases, the fact may be so, though by no means in all, they expect that, without specific proof against the identical example, the objection should be admitted as an insurmountable bar to every specimen that can be alleged. As well might it be contended, that because, as is well known to every one, the temple of Diana at Ephesus was purposely set on fire and destroyed on the night in which Alexander the Great was born, all other temples and erections in the world must have undergone the same fate, and have since been rebuilt. But every case must depend and be decided upon its own peculiar circumstances: the history of one can never be received as the history of all; for what is truth as to one, is not so as to another. The facts of later erection originally, rebuilding of the whole since, or alteration in any subsequent repair, are, in their own nature, as capable of proof as any events whatever. If, in the history of the particular edifice, no mention can be found that any part is of a subsequent erection, that the whole has been rebuilt or repaired, or any alteration made in consequence of repair, what stronger evidence can there be that no such events ever took place, especially too, if no instances are produced from the building itself, to show that mouldings, or other members, had been cut through or otherwise injured in the supposed alteration? To every intelligent mind it is clear, that assertion without proof can no

more be received to invalidate history, than to confirm and support it ; and when objections, founded on facts, are advanced, it will then be for consideration whether they apply, and to what extent. But till assertion is converted into proof, and that proof found to destroy the authenticity of the instances produced, those instances must, by every rule of good sense and right reason, and infallibly will, be regarded as adequate evidence by every competent judge.

In the present case there is no reason, from any fact which has yet been discovered, to suppose that this part of the building is not of the same age with the rest, or that it has undergone any subsequent alteration; neither of these events being related of it. The architect's object was manifestly to introduce materials ready wrought, which had been before procured, and were of different sizes and patterns; and his business was to invent such a form as would admit them all, and settle such an arrangement as would make them correspond with each other. His difficulty in this is said to have been great, as every one must readily perceive; and perhaps, either because some of the columns might have been formed on a smaller scale, and consequently were not so tall as others, or because a less distance between was requisite to secure a more solid foundation for them, or a better support for the roof above, he might be compelled to use the pointed arch, which in height would preserve an uniformity with semicircular arches of a wider span, at the same time that its width was considerably less. Nor is the disparity between the two sorts so great as might be imagined, if it is recollected that the curves in both



are formed from the sweeps of a circle ; that in one instance the arch is a semicircle ; and in the other, two segments of a circle intersecting each other at top \*. The introduction of pointed and semicircular arches in the same building, is, perhaps for this very reason, by no means unusual ; and even in the church of the hospital of St. Cross at Winchester, which some have erroneously supposed the first instance of the use of the pointed arch †, which it has been already shown not to be, both pointed and semicircular arches are found introduced. Such persons, when they conceived this church of St. Cross a more ancient example than any before discovered, were never led to question for that reason, whether the pointed arches in it were original or not ; nor indeed is there any ground for such a doubt. But the dome at Pisa is as little liable to question, and the circumstance of its being an earlier instance is no adequate cause for rejecting it.

Indeed, the more the question as to the age of the pointed arch is examined, the less reason will be found for disputing this example. It is certainly true, that it occurs at a much earlier period than is generally ima-

\* The transition from the semicircular to the pointed arch, is by no means in reality so sudden as it appears ; for an arch of an intermediate form, consisting of straight sides and a pointed top, comprising two sides of an equilateral triangle, was in use in the ninth and tenth centuries. Mr. Ledwich notices this, and cites as his authority the coins of Berengarius king of Italy, and Louis the Pious, and those in the *Menologium Græcum*, Urbini, 1727.—See *Archæologia*, vol. viii. p. 193.

† Milner's *Hist. of Winchester*, vol. ii. p. 140. See *Essays on Gothic Architecture*, p. 130.

gined, and that the mode of constructing it geometrically was known very early. For, besides the before-mentioned coin of Charlemagne exhibiting the church of Aix-la-Chapelle, the authenticity of which there seems no reason to question; in a representation of the crucifixion of St. Peter, in a painted window in the church of St. Andrew in Barbara, mentioned by Ciampini, vol. i. p. 52, and the date of which, from the dresses, he places in the fifth century, a pointed arch is seen \*. It also occurs in a specimen of mosaic from the oratories of St. John the Baptist in the Lateran church at Rome, as given by the same author, vol. i. p. 340, plate 75; the originals of which, he says, p. 238, were done by order of pope Hilary, in 462 †. And, lastly, the mode of striking the curves for the pointed arch as a geometrical form, is clearly pointed out in the first proposition or problem of Euclid, in which he gives the mode of describing an equilateral triangle upon a given finite straight line ‡. If it be objected, that Euclid, who lived about 332 years before our Saviour §, wrote in Greek, a language but very imperfectly, if in any degree understood in the early ages, and that, therefore, his writings were inaccessible to such men as architects may be supposed to have been; the answer is, that with Latin they are known to have been acquainted;

\* A copy of it will be found in Plate III. Fig. 5, of the present work.

† See also a cut from this, Plate III. Fig. 1 & 2, in this work.

‡ See this in Plate III. Fig. 4, of this work, from Simson's Euclid, 8vo. Edinb. 1767, p. 7.

§ Helvici Chronologia, p. 71, on the authority of Diogenes Laertius.

that the works of Euclid were translated from Greek into Latin, by Boetius, in the time of Theodoric king of the Goths, that is to say, between 493\* and 525†; that the writings of Euclid were among the works recommended to Theodoric's attention by Cassiodorus‡; and of Boetius's translation mention is made in a letter to Boetius himself, written by Cassiodorus in that prince's name §.

The dome at Pisa, which is said by Felibien, p. 187, to have since passed for one of the most sumptuous in Italy, soon acquired, says Vasari, such reputation as to excite a strong spirit of emulation in the Tuscans; and to this he attributes the re-erection of the church of St. Paul at Pistoia, begun to be rebuilt in 1032, which he mentions as having been followed by many other churches, too numerous to be particularized ||.

Vasari has also said, that in 1060 the round church of St. John, opposite the dome at Pisa, was erected; and adds, that he had seen an ancient book containing an account of the progress of the work in the erection of that dome, from which it appeared that the columns, pilasters, and vaultings in this church of St. John were raised and made in fifteen days; a supposition so incredible, that he himself could not omit to express his surprise at it as a marvellous circumstance, almost wholly beyond belief. Indeed, there is every reason to imagine, from its gross improbability, if not impossibility, that, in making the entry in the book which he saw, something

\* Helvici Chronologia, p. 103.

† Ibid. p. 105.

‡ Cassiodori Opera, edit. fol. Rothomagi, 1679, vol. i. p. 112.

§ See the letter itself, in Cassiodorus, vol. i. p. 21.

|| Vasari, vol. i. p. 227.

must have been accidentally omitted, which it is now impracticable to supply. He speaks also of the outside of this building as abounding with columns, carvings, and historical subjects; and says, that in the frieze of the door in the midst is a figure of our Saviour, and others of the twelve Apostles, in mezzo-relievo, in the Greek manner\*. From this circumstance it appears, that at least at this time, if not before, the passion for ornament and decoration had taken a more extensive direction, and, instead of confining itself, as at first, to the introduction of mosaic, had been applied to sculpture also; probably because this last species was less operose and tedious, and consequently less expensive, at the same time that its progress was abundantly more rapid. The authority produced by Vasari is such as to preclude all doubt that the building which he has sufficiently ascertained, and which is since known by the appellation of the Baptistery of St. John, was erected in the year 1060: but it should seem, though from what cause it is impossible to discover, that it must have been also afterwards rebuilt in 1153, by Diottisalvi; as the name of that artist is said by Della Valle, in his *Lettere Senesi*, vol. ii. p. 18, to be still visible as master of the work on one of the pilasters; and an inscription on another, which testifies that in 1153, and in the month of August, that church was founded.

Besides these, Vasari has noticed, that about the same period, namely, the year 1061, the inhabitants of Lucca began the church of St. Martin in that city, which he says was erected from the design of some of the disciples of Buschetto, because there were then no other

\* Vasari, vol. i. p. 229.



architects in Tuscany. Of this church he relates, that in the front of it is a portico of marble, with a multitude of ornaments and carvings, representing transactions which passed in the time of pope Alexander II. and executed about the time when, from being bishop of that city, he was advanced to the papacy. In another part of the same front are, he says, other figures, and under the portico many historical subjects in marble, in mezzo-relievo, relating to the history of St. Martin, which are in the Greek manner; but the best of the carvings occur over one of the doors, and were executed an hundred and sixty years after by Nicola Pisano, and finished in 1233\*.

Similar to these, says Vasari, were also all the edifices which from the time here spoken of, down to the year 1250, were erected in Italy, because little or no improvement within the space of so many years is seen to have taken place in architecture; but it was still confined within the same limits, and continued in the same barbarous style†.

Felibien, p. 189, has observed, that notwithstanding the domestic and foreign wars in which the French were engaged under the reigns of the greater part of their sovereigns of the second race, they had yet never ceased to cultivate architecture. They had, however, employed themselves in it with additional and extraordinary success as soon as Hugh Capet had ascended the throne, as he did in 987‡; so that among the buildings erected in the reign of king Robert, which began in

\* Vasari, vol. i. p. 228. Felibien, p. 188, says of this church of St. Martin, that it passed for very considerable in that country.

† Vasari, vol. i. p. 229.

‡ Helvici Chronologia, p. 122.

998 \*, and terminated in 1030 †, there are some which, without hesitation, may be placed in the rank of the most sumptuous in that author's time to be seen in Europe. Of this number is the cathedral of Chartres, which having, while Fulbert was bishop, been destroyed by lightning, was, about the year 1020, rebuilt by him, and he himself took the principal conduct of the undertaking. Robert king of France, Canute king of Denmark and England, William fourth duke of Aquitain, Richard duke of Normandy, Eudes II. comte de Chartres, and several other princes and noblemen, contributed very large sums to augment the magnificence of this edifice. And the same writer says, it may be truly affirmed that no building more beautiful, solid, or extensive, was at that time constructed ‡.

As a proof of this, he has given a description of the church, which, in an inquiry like the present, it has been judged necessary here also to insert. He says it is about seventy toises in length, which, as the toise is commonly estimated as 6 feet §, would be 420 feet; and 18 toises, or 108 feet, high. The transept is 35 toises, or 210 feet, in length; the nave near 8 toises, or 48 feet wide, and accompanied with a single aisle on each side 7 toises, or 42 feet, high, and about 3 toises and an half, or 21 feet, wide. The transept and choir are also surrounded with aisles, but round the choir they are doubled, and twice as wide as the single aisles of the nave; and round the circular end of the church are seven chapels of different widths and depths, but of the same height, which is equal to that

\* Helvici Chronologia, p. 122.

† Ibid. p. 124.

‡ Felibien, p. 189.

§ Cotgrave's Dict;

of the side-aisles. The crypts under this church, which he calls grottos, occupy almost as much space as the church above ; for they are equal to the breadth of the aisles which surround the nave, the transept, and the choir. In the same part are also seven chapels which correspond with those above ; and under the choir and in some other places crypts or grottos are found one under another\*.

While this church of Chartres was thus proceeding, king Robert caused the church of St. Rieule at Senlis to be built, as he did also the collegiate church of Estampes, the churches of St. Hilary, Notre Dame, and St. Aignan at Orleans, the church of Vitry, St. Cassian at Autun, St. Leger in the forest of Iveline, the church of Notre Dame at Poissy, and St. Nicholas in the Fields, near his palace, just out of the city of Paris. He also caused Montfort and Espernon to be surrounded with walls and fortified with towers, and undertook a multitude of other buildings. These sufficiently show that he was no less addicted to architecture than to the other arts and sciences, which he had particularly studied under Albert, abbot of Fleury on the Loire, or, as it has been since called, St. Bennet on the Loire†.

About the same time, the church of St. Genevieve at Paris was begun to be rebuilt. Thibault, priest and chanter of this church, constructed a part of the clock-tower ; and a person named Maignaud built the portico of the church ; both evidently, from Felibien's account, as architects. The rest of the building was erected in the twelfth century, by Stephen de Tournay, the then abbot of the place‡.

\* Felibien, p. 190.

† Ibid. p. 191.

‡ Ibid.

## CHAPTER VI.

*Buildings in France under Henry I.—Church and Monastery of St. Remigius at Rheims—Church of the Holy Sepulchre at Jerusalem again rebuilt in the eleventh Century—Erroneously supposed to have been in Part re-erected since—This Opinion refuted—Clustered Columns, the 'Origin and Reason of—Church of St. Lucien at Beauvais rebuilt—Buildings in England—Westminster Abbey rebuilt by Edward the Confessor—Said to be of a new Mode of Building—In what that new Mode consisted—Arches in it, whether pointed—Pointed Arches in use in England in the Time of Edward the Confessor.*

UNDER the reign of Henry I. the son of king Robert, which began in 1031 \*, and ended in 1059 †, several considerable buildings were also erected. The church and monastery of St. Remigius at Rheims was, in the year 1049, founded by abbot Hermer, and consecrated by pope Leo IX. who held a council there ‡. This is not the church now standing; for, in consequence of a fire, it was rebuilt almost from the foundations in 1210 §. The same pope, Leo IX. also induced Yves comte de Bellesme and Alençon, and bishop of Seez, to rebuild his cathedral church, which had been accidentally set on fire in the attempt to dislodge a troop of thieves who had render-

\* Helvicus, p. 124.

† Ibid. p. 126.

‡ Felibien, p. 192.

§ Marlot, vol. ii. p. 470.



ed themselves masters of it, and profaned it with all kinds of impieties. This church had been erected but a short time before by an ecclesiastic named Azon, who must be considered as an able architect. Leo IX. also exhorted a number of other prelates and lords to repair and rebuild the ruined churches, as well in France as in other places in Christendom; and it was, as Felibien says, in consequence of his remonstrances, that Constantine Monomachus, emperor of the East, caused the church of the Holy Sepulchre at Jerusalem to be rebuilt, which the Saracens had destroyed at the end of the tenth century \*.

For these latter facts Felibien refers to William archbishop of Tyre, whose work occurs among the collection entitled *Gesta Dei per Francos*. Willermus, as he is there called, says, vol. i. p. 630, that he wrote his book in the year 1183; and in the same volume, p. 631, mentioning Hequen, the caliph of Egypt, he relates, that, amongst other pernicious acts, he commanded the church of our Lord's Resurrection, which had been erected by Maximus, bishop of that city, at the command of Constantine Augustus, and afterwards repaired by Modestus, in the time of Heraclius, to be entirely demolished. By the context he evidently means the church of the Holy Sepulchre at Jerusalem; and he adds further, that this order was sent to a person named Hyaroc, who, in consequence of it, took effectual care that the church should be pulled down to the ground, conformably to the royal command.

After the death of this caliph, his son Dapher suc-

\* Felibien, p. 194.

ceeded to his throne ; and he, at the request of the Roman emperor at Constantinople, surnamed Heliopolitanus, with whom he renewed a league which his father had broken, and for whom he had contracted a friendship, granted permission to the Christians for the re-erection of this church.

The Christians resident at Jerusalem were unable to raise the necessary sums for that purpose, and they were therefore necessitated to apply to Constantine Monomachus, the emperor of Constantinople, who in the mean time had succeeded to the imperial throne, for the extension of his liberality to that object. In this application they were successful, and the emperor was induced to undertake the rebuilding of the church at his own expense. Willermus adds, that at that time Nicephorus was patriarch of the church of Jerusalem ; and that this permission having been obtained, and the necessary expenses defrayed out of the imperial treasury, that church, says he, of the Holy Resurrection which is now existing at Jerusalem, was erected in the year of our Lord 1048, fifty-one years before the deliverance of the city, and in the thirty-seventh year after the former church had been thrown down.

It has indeed of late been said in one instance, that, after the conquest of Jerusalem in 1099, Godfrey of Boulogne built the choir of the church of the Holy Sepulchre, and that the architecture is similar to that of a Norman church in our own country \*. No authority for the fact of this building of the choir is cited ; and indeed, as will be presently seen, there is.

\* Archæolog. vol. xv. p. 368.

great reason to doubt it. William archbishop of Tyre, above mentioned, says, vol. i. p. 767, that when Godfrey of Boulogne had taken Jerusalem, and obtained the sovereignty of it, he immediately placed canons in the church of the Holy Sepulchre, and in the Temple; that he assigned them ample benefices, called prebends, and convenient houses, situated round those churches; and that he would have done more, had he not been prevented by death. Fulcherius Carnotensis, who appears to have been contemporary with Stephen of Blois, afterwards king of England \*, relates, in his *Gesta peregrinantium Francorum*, inserted in the same collection, vol. i. p. 381, that when Godfrey had been elected sovereign of that city, canons were placed in the church of the Holy Sepulchre, and in the Temple †. Neither of these authors intimates that any part of the church of the Holy Sepulchre was rebuilt by Godfrey, which, had it been true, the former of them particularly was not likely to have omitted. But William archbishop of Tyre, who had himself been at Jerusalem, had consequently seen the church, and wrote in the year 1182, expressly asserts, that the church then standing was that which had been erected in 1048, fifty-one years before the city was taken by Godfrey. Whoever recollects, as was the case, that Jerusalem was not taken till the 15th of July 1099 ‡, and that Godfrey died on the 15th of the calends of

\* See the account of him in the Address to the Reader prefixed to the whole volume.

† Fulcherius Carnotensis, p. 399, under the year 1099.

‡ See Fulcher. Carnot, p. 399.

August (which must have been the 18th of July\*), in the next year, 1100†, so that his reign was very little, if any thing, more than twelve months, will indeed see further reason also to question the probability that any rebuilding by him could, within so very short a period, have taken place. The above assertion, as to the rebuilding, it is true, confines the supposed re-erection to the choir alone, and does not speak of it as a re-edification of the whole, or indeed of any part of the fabric itself; but even for this limited construction of the passage authority is still wanting, as the historians are silent on the subject. Any one who examines that part of the structure, as represented from Bernardino‡, in Plate VI. of this work, will be fully convinced that four such massy clustered columns, with the cupola above, could not have been erected in so short a space.

Of this church, no longer existing, which had in some respects, both in form and proportion, been adopted as the model in the erection of many Gothic cathedrals, a plan and two sectional views of different parts of the elevation will be found in Plates No. V. VI. and VII. of the present work. The particulars of resemblance will be noticed in a future page, as a more convenient place, and need not be here further pointed out than to remark, that the ideas for the introduction of chapels in the ambulatory round the choir, and at the east end, and for the use

\* See the *Kalendarium Romanum* at the end of Littleton's *Latin Dict.*

† *Fulcher. Carnot.* vol. i. p. 402; sub anno 1100.

‡ *Trattato delle Pianta et Immagini de sacri Edifizi di Terra Santa*, 4to. Firenze, 1620, p. 39.



of the clustered column, so often to be seen in Gothic edifices, seem to have been derived from this.

With those who are no friends to Gothic architecture, scarcely any objection is so frequent as the slenderness of the columns. It might be a reasonable answer to this to say, as is the fact, that the columns are not to be considered singly, except where they singly occur, but that the whole cluster should be estimated as forming, as it does, a conjoint support, composed of smaller subdivisions. The Gothic architects, however, have no reason to shrink from an examination, the result of which, instead of tending to criminate them, will be only to evidence their great sagacity and judgment, and the extent of their knowledge in natural history.

The Scripture, describing the temple of Solomon, frequently mentions palm-trees, their branches and leaves, introduced as embellishments into various parts of the building; and in erections constructed for a similar purpose, there was manifestly a singular propriety in employing the same kinds of ornaments and decorations. One reason for their original use might probably have been, that the architecture of every country must always bear some relation to the forms of the materials for building which that country affords. Now no trees of any bulk for timber were to be found in the Holy Land, for the soil would only supply the palm-tree, the stem of which was slender in its girth, tall in its height, and equal, without either increase or diminution of size, all the way up to the very boughs. As the first idea of a column was unquestionably suggested by the sight of a

tree \*, it was natural for the architects in their use of them to follow that species of tree which their own country produced ; and where the apparent size of the tree was inadequate to the support which the superstructure would require, to make up the deficiency of individual strength by the accession of several into one cluster. A method like this would have been reasonable in itself, even had there not existed, as there did, another circumstance in natural history which abundantly shows the research and intelligence of these artists.

Aulus Gellius, book iii. chap. 6, on the authority of Aristotle and Plutarch, has related, that if a palm-tree be loaded with more than it can support, it will not swerve from the upright, but resist the weight, and endeavour to bend upwards. He adds, that Plutarch gives as the reason for assuming the palm as the symbol of victory, that it was the nature of that wood not to yield to any weight. Plutarch †, in the passage to which Aulus Gellius alludes, noticing some peculiarities of the palm-tree, adds, “And besides all these it has this quality, of which no other tree can boast, that if the wood of the palm be loaded with a superincumbent weight, it will not shrink aside or yield to it, but, on the contrary, endeavour to bend upwards, as if resisting by force the load which oppresses it.” The very same thing, he remarks, takes place in athletic competitions ; for those who through imbecility and delicacy give way,

\* Vitruvius, book v. chap. 1, says, that columns ought to imitate the nature of trees, and therefore diminish at top.

† Symposiaca, lib. viii. Questio Quarta.

are shaken and depressed: but those who can bravely sustain exertion, find not only their bodies, but their minds, strengthened and invigorated.

Hoffman, in his *Lexicon*, has observed, that what authors have with one consent related as to the resistance of the palm-tree against any weight, is not to be understood of the tree with its boughs and foliage, but of the wood itself, as, he says, is apparent from the above passage, and also from Strabo *Geograph.* book xv. where that author asserts, that a beam made of the wood of the palm-tree has this peculiar quality, that when it is strengthened by age it will not yield to a weight placed on it, but will rather bend upwards like an arch, and is therefore so much the fitter for supporting the roof of a building. Strabo says, that Theophrastus has, in his *History of Plants*, book v. chap. 7, related the same of the ash and the pine. Notwithstanding Hoffman's remark, the usual and general opinion seems to have been, that the tree in its natural state, and not when reduced to a beam, was the object meant both by Plutarch and Aristotle. Indeed, without this its use as the symbol of victory loses much of its propriety; and the other supposition cannot be freed from the absurdity of attributing to a tree when dead that vigour and power of exertion which it did not possess when living and growing. Resting on the interpretation above mentioned, the palm-tree, when growing, has been assumed by emblematisers, and Alciat among the rest, as the symbol of fortitude under the pressure of evils, and a complete illustration of the precept delivered by Virgil in the person of the Sibyl to Æneas, *Æn.* lib. vi. line 95 :

Tu ne cede malis; sed contra audentior ito.

Yield not to evils; but still bolder grow \*.

As a still further proof of the intelligence and science of these ancient architects, and especially of their acquaintance with natural history, it is necessary to observe that Denon, in his *Travels in Egypt*, mentions having seen the dum-palm-tree, which he describes as possessing a leaf resembling that of the racket-palm, and as not, like the date-tree, consisting of a single stem, but from eight to fifteen. He says further, that its ligneous fruit is attached in bunches to the extremities of its principal branches, from which spring tufts which compose the foliage of the tree; and that it is of a triangular form, and of the bigness of an egg.

In this one instance of the dum-palm-tree, which, in all probability, is not confined to Egypt, but occurs in other countries where the common palm-tree is to be found, the first idea of the clustered column is plainly to be traced; and as this tree contains also the geometrical form of a triangle, as exemplified in its fruit, it

\* To remove all possible doubt whether the circumstance relating to the nature of the palm-tree, as mentioned by Aristotle and Plutarch, were sufficiently known at the time when the clustered column was introduced, it is worthy of remark, that the fact of its propensity to resist is mentioned by Joannes Sarisburiensis in his *Policraticus*, sive *De Nugis Curialium et Vestigiis Philosophorum*, lib. v. cap. 6; and that he there cites the authority of Aristotle in his seventh book of *Problems*, and Plutarch, in the eighth book of his *Memorabilia*. See Joan. Sarisb. *Policraticus*, edit. 12mo. Lugd. Bat. 1595, p. 229. Joannes Sarisburiensis was chaplain and disciple of Becket, archbishop of Canterbury, and lived about the year 1140. See Trittenhemius's account which follows the dedication in the edition above referred to.



possibly might suggest the hint, though not for first adopting, yet for continuing, that figure as the principle for the arches to be placed on those columns. Certain it is, that in Gothic architecture the triangle is the most usual rule for the construction of the pointed arch.

About the year 1078 the church of St. Lucien at Beauvais was rebuilt by two workmen, who in an ancient obituary are described as ‘*cæmentarii*,’ or masons, because the appellation of architect was then little used in France, and the term mason was given to all those who professed the art of building. One of these two workmen was named Wirmbolde, and built the greater part of the structure; the other, called Odo, erected only the tower \*.

This, says Felibien, is all that can be learnt as to the workmen who appeared in France in the eleventh century. Still less is, he adds, to be found in relation to those who were employed in the circumjacent countries, and even in England, where architecture was sedulously cultivated by king Edward, who built the church of Westminster in 1066, and by William duke of Normandy, his successor, who, in 1067, caused Battle abbey to be erected †.

The church of Westminster, though so slightly noticed by Felibien, merits a more particular attention, because it is said to have been of a new style of building; but as antiquaries have been very much at a loss how to understand this assertion, it shall here be inquired what that new mode really was.

Widmore, on the authority of Sulcardus, who lived

n, p. 193.

† Ibid. p. 194.

in the early part of William the Conqueror's reign, places the rebuilding of this church by Edward the Confessor within the period when Eadwine was abbot there, to which station he was not advanced till 1049, as his predecessor, who held it till his death, did not die till that year†. It appears also, that on Innocents' day, 28th December, 1065, the church, which was then just finished, was consecrated; and that on the 5th of January following, only eight days after the consecration, the king died‡. At the time of its consecration the church was undoubtedly complete, as no mention is any where found of its having been finished after his death; but it is certain, that, for the reasons above mentioned, it could not have been begun before 1049, and it might probably not have been undertaken till a still later period.

Of this church, no part of which is now standing §, a description has been given in Latin from an ancient manuscript; but as it is believed that it has never been correctly rendered, and as the attempt by Sir Christopher Wren for that purpose || is manifestly faulty, a new effort shall here be made to give it more faithfully, the original Latin being also inserted in the note ¶.

\* Widmore's Account of the Writers, at the end of his Inquiry into the first Foundation of Westminster Abbey, p. 4.

† Widmore's History of Westminster Abbey, p. 8.

‡ Ibid. p. 15.

§ Ibid. p. 10.

|| See it in his Letter to the Bishop of Rochester, inserted in Widmore, p. 45.

¶ Principalis area domus, altissimis erecta fornicibus quadrato opere, parique commissura circumvolvitur; ambitus autem ipsius ædis duplici lapidum arcu ex utroque latere hinc inde fortiter soli-

The principal area (or nave) of the building, erected with very lofty arches of squared work, is with a similar mode of construction brought round at the end. But the ambulatory of the church itself, strongly compacted together with a double arch of stone from each side in both directions, is enclosed by the extreme wall of the building. Besides this, the cross of the church, in order that it might surround the choir in the midst for those who perform the service, and by its double pressure in both directions might support the lofty summit of the tower in the middle, rises at first in a simple manner with a low and strong arch; afterwards it swells with several staircases, artfully ascending in various directions; and at length with a single wall is carried up to the timber roof well covered with lead.

It is much to be regretted that the original author of this description, whoever he were, has sacrificed, as he appears to have done, the more valuable qualities of precise and definite information, to the inferior consideration of showing his dexterity in avoiding the usual terms, and of manifesting how many varieties of expression for the same sentiment his recollection

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*data operis compage clauditur. Porro crux templi quæ medium canentium Domino chororum ambiret, & sui gemina hinc inde sustentatione mediæ turris celsum apicem fulciret, humili primum & robusto fornice simpliciter surgit; deinde cochlæis multipliciter ex arte ascendentibus plurimis intumescit; deinceps verò simplici muro usque ad tectum ligneum plumbo diligenter vestitum pervenit.*—Reges, Reginæ, Nobiles et alii in Ecclesia B. Petri Westmonasterii sepulti, 4to. Lond. 1603, in the Preface entitled *Fundatio Ecclesiæ Beati Petri Westmonasterii.*—It is there said to be given from an ancient manuscript, but no reference to the original author is inserted.

could suggest. While he is thus labouring to exhibit himself, instead of his subject, to notice, he has furnished the reader with so little idea of the form of the edifice, that it would puzzle any one to give a tolerable representation of its appearance, or really to understand how it was formed—a kind of intelligence, however, which could hardly have failed of being clearly conveyed in a very few words by any one who had possessed a competent knowledge of the subject on which he was writing.

From this description, which is so general as to suit with almost every building of the kind, and so indefinite as to convey no competent idea of any one, all that is to be learnt is, that the church consisted of a principal area or nave, which, as the ambulatory round it is said to be compacted together with a double arch of stone, must have been accompanied with one aisle on each side.

The double arch of stone from each side, which is said to have extended in both directions (*hinc inde*), was formed by placing one arch in a straight-forward direction lengthways of the building, and the other across over the aisle. This is perpetually the method in such erections; and it can never mean, as Sir Christopher Wren, in his translation of the passage, supposes, that the aisles had a double vaulting in two stories, because the expression '*hinc inde*,' on which he manifestly founds his opinion, never signifies above and below, which it must, to justify his interpretation. The choir was evidently, from this description, in the middle of the cross; and in the centre over the cross and the choir there was a lofty tower which contained in its angles staircases for ascending to the roof of the build-



ing. Sulcardus adds also, that the edifice was supported on several columns, and consisted of multiplex arches, the ribs of which were carried up in both directions\*.

In this church, as here described, nothing of peculiarity is discernible; notwithstanding which, it certainly was an instance of deviation from the usual mode of construction, and adopted in that respect as a model for future erections. William of Malmsbury, who certainly lived in the twelfth century, and seems to have been contemporary with king Stephen†, speaking of Edward the Confessor and his interment at Westminster, says, that he erected at Westminster a church in a new mode of building ‡; and Matthew Paris, who died in the year 1259 §, mentioning the interment of the same king Edward the Confessor, relates, that, when the king was dead, he was on the morrow buried at London, in the church which he himself had erected in a new style of building; from which church, many persons afterwards, when erecting churches, having taken example, imitated that work at great expense ||.

\* See the passage from Sulcardus in Widmore, p. 10, in a note.

† Nicholson's Historical Library, edit. 1714, p. 57 and 58.

‡ Qui ampliori monachorum conventu ibidem adunato ecclesiam ædificationis genere novo fecit.—Willelmus Malmsburiensis, inter Scriptores post Bedam, edit. 1596, fo. 134.

§ Nicholson's Hist. Library, p. 62.

|| Defunctus autem rex beatissimus, in crastino sepultus est Londonii, in ecclesia, quam ipse novo compositionis genere construxerat, à qua multi post ecclesias construentes, exemplum adepti, opus illud expensis æmulabantur sumptuosis.—Matt. Paris, edit. 1571, p. 2. Matthew of Westminster, edit. Francof. 1601, p. 220, uses Matthew Paris's words, with the change of one only, 'æmulantur' for

Widmore, to answer these assertions, that it was of a new kind of building, says, p. 10, it was erected in the shape of a cross, and that that being new in this kingdom, it served for a pattern much followed for the building of other churches. But he is mistaken; for the form of a cross was no novelty in this kingdom, as it had been already used in the church of the abbey of Ramsey in Huntingdonshire, erected in the time of king Edgar, and finished in 974 \*. Some persons of late years have considered this change as consisting only of an enlargement of size †; but an

‘æmulabantur;’ and if this alteration were intentional, it should seem as if he thought the style of architecture prevalent in his own time, which was about the year 1307, when his History ends (see Nicholson’s Hist. Lib. p. 66), was also derived from the church of Westminster as re-erected by Edward the Confessor.

\* See Bentham’s Preface to his History of Ely, as inserted in Essays on Gothic Architecture, p. 52. In the passage here referred to, this church is said to have been six years in building, and finished in 974, in which last year it was dedicated. Its form is thus described — It had two towers, raised above the roof, one of them at the west end of the church; the other, which was larger, was supported by four pillars in the middle of the building, where it divided in four parts, being connected together by arches which extended to other adjoining arches, to keep them from giving way. From this, says Bentham, one may easily collect that the plan of this new church was a cross, with side-aisles, and that it was adorned with two towers, one in the west front, and the other in the intersection of the cross. The original Latin passage from which Bentham’s description of the church is taken, is to be found in the Hist. of Ramsey, among the XV. Scriptores published by Gale. See it also in Essays on Gothic Architecture, p. 97.

† Bentham says, the Normans repaired and enlarged the churches and monasteries, and erected new ones in a more stately manner than had been known in these kingdoms before. This, says he, is what

augmentation of dimensions can, by no mode of reasoning whatever, be termed a new style of architecture, or even a new mode of composition or building; and no rational man would ever think of affirming that the churches of St. Peter at Rome, and St. Paul at London, were of different styles, because they were not of the same size.

Had those who first produced these two passages from William of Malmsbury and Matthew Paris, had the curiosity to turn to others in those authors, where, from the nature of the subject, the same event of the death of Edward the Confessor might be reasonably expected again to have been noticed, they would have found, particularly in the instance of the former of these two writers, a solution of the difficulty in a passage infinitely more strong than either of the above, but which, from the similarity of expression, it is evident this latter author had seen. Relating the events of the Confessor's reign, William of Malmsbury says, that not long after the return of Harold from Normandy, the king, Edward the Confessor, on Christmas day was crowned at London, and there being taken ill, and finding death approaching, he commanded that the church of Westminster should be dedicated on Innocents' day (viz. 28th December) following; that he afterwards died, and was buried on the day of the Epiphany (viz. 6th January) in the same church, which he first of all persons in England had erected in that style of architecture, which

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our historians take notice of, and call it a new manner of building. Bentham's Preface, as inserted in *Essays on Gothic Architecture*, p. 63.

style almost all persons now imitate at great expense \*. William of Malmsbury, as has been before observed, lived and wrote in the time of king Stephen, at which period the building he is describing was still actually standing; for the Confessor's church at Westminster was not pulled down till the reign of Henry III. and then only in that part towards the east †. The new work erected in the place of what was then removed, is at this time existing, and was so contrived as to fit the western part of the church, which was then permitted to stand ‡, though that also has been since taken

\* *Nec multum temporis intercessit, quod illo domum reverso, rex in natale Domini apud Londoniam coronatus est, ibidemque morbo iectus quo se moriturum sciret, ecclesiam Westmonasterii die Innocentium dedicari præcepit. Ita, ævi plenus & gloriæ, simplicem spiritum cœlesti regno exhibuit, & in eadem ecclesia die Theophaniæ sepultus est, quam ipse illo compositionis genere primus in Anglia ædificaverat, quod nunc pene cuncti sumptuosis æmulantur expensis.*—Willelmus Malmsburiensis ubi supra, fol. 52, b. It is to be observed, that the coronation here mentioned could have been only a repetition of that ceremony; a practice which at different periods the kings of this country frequently used; for Edward's original coronation took place on Easter day, 1043 (*Ingulphi Historia, inter Scriptores post Bedam, edit. 1596, fol. 509, a*); whereas this is mentioned as having been performed but a short time before his death, and consequently in 1065.

† *Eodem vero anno, dominus rex, devotione quam habuit adversus Sanctum Edwardum, submonente, ecclesiam Sancti Petri Westmonasteriensem jussit ampliari. Et dirutis antiquis cum turri muris partis orientalis, præcepit novos, videlicet decentiores, suis sumptibus, subtilibus artificibus convocatis, construi: & residuo, videlicet occidentali, operi coaptari.*—*Matt. Paris, fol. edit. 1571, p. 294.* It appears from p. 892, that 'eodem anno' in the above passage means, Anno 1245.

‡ See the passage from Matthew Paris, given in the preceding note.



down and rebuilt. Matthew Paris, who lived in the time of Henry III. and died five years after the commencement of the rebuilding of Westminster abbey, had no doubt often seen the former church, and was unquestionably well informed, perhaps from ocular inspection, what alteration was intended to be made in the new fabric. He has related the above particulars in the passage already given in the preceding note, which fully shows that the present church, though perhaps its extent each way may be greater, actually covers the spot where the Confessor's erection had stood.

By the last-cited passage from William of Malmesbury, the Confessor's church at Westminster is decidedly shown to have been of the style of architecture which prevailed in the reign of king Stephen, namely, from 1135 to 1154, and may well be judged of from similar erections in the reign of the latter king.

It is observable, that this author does not attribute to Edward, or his architects, the invention of that style of architecture, but only the introduction of it into this kingdom, as he says that that king was the first who used it in England. The probability, therefore, certainly is, that it was not invented here, but imported from France, and particularly from Normandy, where Edward had resided from a very early age to the time of his elevation to the throne\*. From that country there is every reason to believe the Confessor's architects and materials were procured. His own partiality for the natives of France and Normandy, the consequent rejection of the English customs and manners, and the

\* Henrici Huntingdoniensis Historia, inter Scriptores post Bedam, edit. 1596, fol. 206, a. Ingulphi Historia, ibid. fol. 500, a.

adoption of those of the French in their stead, are circumstances noticed by Ingulphus\*. And Sir Christopher Wren says, he finds that after the conquest, which is only a few years later, all our artists were brought from Normandy, and that they loved to work in their own Caen stone, which is more beautiful than durable†.

No intelligence has been given in what form the arches of this church of Edward the Confessor were constructed; yet, if a coin which has been produced as of that time, merits to be considered as genuine, which it has been, it would lead to an opinion that the arches were pointed. The coin here alluded to is mentioned by Mr. Ledwich in a paper in the *Archæologia*, vol. viii. p. 193, as given by Camden, and as containing a representation of a church with a pointed arch, supposed to be that of Bury St. Edmund. But as one of the passages already given from William of Malmsbury, ascertains the style of the church at Westminster to have been that usually adopted in the reign of king Stephen, there does not seem sufficient authority to justify the conclusion that the arches in that were pointed.

That pointed arches were however known and used in this country so early at least as the time of Edward the Confessor, if not before, seems unquestionable, because they occur in a variety of proportions in a cellar under the late House of Lords, in which cellar the Powder Plot was intended to have taken effect. This cellar was certainly a part of the palace which is said to have

\* Ingulphi Historia, p. 509, a.

† See his Letter to the Bishop of Rochester, in *Widmore*, p. 49;

been erected by him, if it were not indeed rather a part of that which existed there before \*. It has every appearance of having been the original kitchen; and there is no ground for supposing it has undergone any alteration; for though the palace at Westminster is mentioned by Stow, on the authority of Fitz-Stephen, as repaired in 1163 by Becket, then chancellor of England, which, as he says, was before ready to have fallen down †; yet as he notices that the repair was completed with exceeding great celerity and speed ‡, it could have only extended to a small portion, and that only of the upper parts of the building. It could never have been a re-edification of the whole, or the construction of rooms on the ground-floor, by way of foundations or supports for the superstructure, with stone walls, such as this cellar has, in some places nine, and in others six feet thick. Nor in the fire in 1299, mentioned by the same author, Stow, p. 520, on the authority of Thomas Walsingham, is there any reason to imagine that the whole edifice was so injured as to require rebuilding; as he speaks only of the destruction of the hall in the king's house, with many other houses adjoining, and with the queen's chamber. But by the term destruction, it is evident he means no more than injury; because he says that the parts thus damaged were afterwards repaired. The painted chamber is one of the rooms in the upper story over this

\* Stow, in his *Survey*, edit. 1633, p. 519, says, that the antiquity of this palace is uncertain; but that Edward the Confessor held his court there, as appears from Ingulphus, which seems to imply that he thought it still older.

† Ibid. p. 520.

‡ Ibid.

cellar ; and no one has ever questioned the fact of that being as old as the time of Edward the Confessor. It is said, indeed, that that king died in it \* ; and Sir Edward Coke notices it by the appellation of the Chamber Depeint (or Painted Chamber), or, as he adds, St. Edward's Chamber †. The walls of this cellar, in some places nine feet thick, and in others six, being also of stone, as they are, were not likely to have ever needed since their erection any repair ; and they were found by the conspirators in the Powder Plot so firm and strong, that a less force than six-and-thirty barrels of gunpowder, small and great ‡, was deemed insufficient to secure their destruction. When pointed arches came afterwards into fashion, there could have been no inducement, if the arches had been originally semicircular, for making on that account a change in the form of those of a room like this, which was never intended for show or splendour, or for elegant uses, but only destined for purposes of absolute necessity, and those of a sordid kind.

\* Howel's *Londinopolis*, p. 356 ; the first so numbered, as there is a mistake in the paging.

† Coke's *Fourth Instit.* edit. 1644, p. 8.

‡ Speed's *Hist. of Great Britain*, edit. 1627, p. 920.



## CHAPTER VII.

*Church of the Monastery of Clugny, as rebuilt in the twelfth Century, an early Instance of the pointed Arch and many of the Particulars of the modern Gothic—Prior to the Hospital of St. Cross at Winchester—Crusades, and their Effect on Architecture—Did not suggest Gothic Architecture—Buildings in Italy in the twelfth Century—Baptistery of Pisa—Particulars of its Style, and how far it resembled or suggested modern Gothic Architecture—St. Mark's Church at Venice rebuilt in the twelfth Century—Buildings in Italy of that Period—Suger, Abbot of St. Denis, rebuilds his Church—Whittington's Observations on the Architecture of France in the twelfth Century—Church of St. Denis an Instance of modern Gothic Style—Earlier Instances than this of the pointed Arch in France, which are also prior to the Hospital of St. Cross at Winchester—The Churches of the Abbey of Clugny and of St. Denis Examples of the later Gothic, and consequently fix the Era of its Introduction into France—Its Introduction into Italy—Clustered Columns supposed to have been introduced by Marchion of Arezzo—Church of Arezzo described—Style of Buildings of the twelfth Century in Italy and elsewhere—Cathedral of Amiens described—St. Nicasius at Rheims—Pure modern Gothic, when established in France—Its Introduction into England—Particulars of modern*

*Style of Gothic Architecture, whence derived—Abbot Suger the Introducer or Reviver of the Use of Painted Glass in ecclesiastical Structures—Particulars of its History—An Opinion of Le Noire's refuted.*

THE church of the monastery of Clugny in France, a building, as it will be found, of great moment in the present inquiry, has hitherto been unnoticed by almost all of those who have endeavoured to account for the rise of Gothic architecture. Whittington is the only one now recollected who speaks of it; and that only in so slight a manner, p. 35, that even he seems not aware of the importance and use of it as an instance on the subject in which he was engaged; for he mentions only its original foundation, and that the present structure was an erection of the eleventh century. Whether it is still standing is not certainly known, or whether, in the convulsions which have of late years agitated France, it may not rather have experienced a similar fate with the church of St. Nicasius at Rheims\*, and perhaps some others, and been levelled with the ground for the sale of its materials. It was originally founded in 912†, and had risen to such a rank

\* An east view of this church, and also a view of its west front, were published in 1805 by Mr. B. Howlett of Vauxhall Walk, from drawings made in 1801; and in the letter-press with which they were accompanied it is said, that "the west façade, or front, was totally destroyed when this view was taken, in 1801, by General Santaire, to whom it was sold for a very trifling sum during the revolution."

† Spondani Epitome, vol. ii. p. 333.

in estimation, as to be considered as the parent of many monasteries of the western church \*; in consequence of which the number of its members had so greatly increased, that in 1093 the buildings it contained were no longer capable of receiving, with any tolerable degree of comfort, the multitude of persons for whom it was necessary to provide habitations. Hugh, the then abbot of Clugny, to remedy this inconvenience, conceived the intention of rebuilding the church and convent, and applied, as it seems, for assistance in his undertaking to Alphonsus, king of Spain, whom in 1074 he had been the means of delivering from captivity †. The aid solicited appears to have been readily granted; as Baronius relates, that in the year 1093, the church of Clugny was rebuilt from the foundations at the expense of Alphonsus ‡. Of this edifice, Gunzo, a monk of Clugny,

\* Heylyn, in his *Cosmography*, p. 186, edit. 1703, speaking of the county of Burgundy, says, "Here is also the great and famous abbey of Clugny, near the town of Beaum, out of which many monasteries in the western church had their first original." In the account of Clugny, which accompanies a view of it in the *Description particulière de la France*, tom. iii. cinquième livraison, No. 20, it is said, that at one time the abbey of Clugny possessed in Europe more than 2000 monasteries, which must be understood as being dependent upon it.

† Spondani *Epitome*, vol. ii. p. 447.

‡ Spondanus, vol. ii. p. 474, speaking of Alphonsus, king of Spain, says, that Bertholdus relates, that he had bravely fought against the Pagans, "multasque ecclesias, jam dudum penitus devastatas, in pristinum statum restaurasse; sed et Cluniaci majorem ecclesiam à fundamentis ædificasse, missa ad hoc infinita pecunia."

was the architect, and furnished the designs\*; but though it does not appear to have been finished till 1131, as it was not consecrated till that year†, its age, and that of every building, must be estimated from the time when it was begun, because, before the first stone was laid, the plans and designs for the whole elevation must have been necessarily settled. This church is a decided example of the use of the pointed arch, not in single instances intermixed with semicircular, but instead, and in exclusion of, the semicircular ones; at least in those parts where the pointed arches occur. All those on each side of the vestibule are pointed, and rest on piers formed of Corinthian pilasters; and the whole of the nave on each side is also composed of a long range of piers consisting of Corinthian columns, supporting in like manner ten pointed arches on each side‡. It was consecrated in 1131 §, which is five years prior to the erection of the hospital of St. Cross at Winchester, as that was not built till 1136 ||. Peter, abbot of Clugny, was in England in 1130 ¶; and Henry of Winchester, who erected the hospital of St. Cross, had himself been a monk in the abbey of

\* See the Life of St. Hugh, abbot of Clugny, inserted in *Surii Vitæ Sanctorum*, April, p. 350, edit. Coloniae, 1618.

† Spondani Epitome, vol. ii. p. 524.

‡ See two inside views of it in the *Description particulière de la France*, fol. tom. iii. seizième livraison, No. 56; copies from which will be found in Plates I. and II. of the present work.

§ Vide supra in this page.

|| Bishop Lowth's Life of William of Wykeham. See *Essays on Gothic Architecture*, p. 144.

¶ *Chronicon Saxonicum*, edit. Gibson, 4to. Oxon. 1692, p. 235.



Clugny \*. These circumstances it has been necessary thus to notice, because some persons of late years have erroneously conceived that Henry of Winchester was the inventor of the pointed arch, and that it was first introduced in the church of the hospital of St. Cross †.

The authorities from which the ideas of the church of Clugny have been on the present occasion obtained, are four views of it, two of them external, and two internal, which are given in the *Description particulière de la France*, tom. iii. seizième livraison, No. 56. They are drawn by Lallemand, an artist evidently of merit, as they are all correctly regulated by the rules of perspective; and indeed, were they not sufficiently accurate in some of the smaller parts, which there is no reason to imagine they are not, it is scarcely credible that any artist could, in making the drawing, have been guilty of so gross a blunder as to mistake the form of the arches. They have all the appearance of accuracy and attention to the minuter parts; and possessing, as they do, every characteristic of authenticity, their authority can never be over-ruled by any evidence short of the testimony of an author who should profess to have seen the buildings, and pronounce them erroneous. Such proof as this, especially in the last particular, there is every reason to believe never can

\* Godwin de Præsulibus Angliæ, edit. Richardson, p. 216, in a note, on the authority of the Saxon Chronicle, Simeon of Durham, and the continuator of Florence of Worcester. See also Joannis Bromton Chronicon inter Decem Scriptores, col. 1023.

† Milner's History of Winchester, vol. ii. p. 148; an extract from which is given in Essays on Gothic Architecture, p. 130.

be produced ; and certainly it is not too much here to insist on it as a fact, that none but an eye-witness is competent to object.

Every adequate judge of the subject who shall be induced to consult the original work as here referred to, will immediately see, in the above-mentioned external views, abundant reason to be satisfied, from its plainness and exact correspondence with the style of that period, that the church cannot since have been rebuilt \*. And indeed, in the letter-press account which accompanies the plates, it is expressly said, that the present church was built by St. Hugh, and consecrated by pope Innocent II. which refers it to the period before mentioned. The same fact is also asserted in Gough's *Alien Priories*, vol. i. p. 104, on the authority of De la Force. If no part of the external fabric has been rebuilt, it is absolutely impossible that the columns and arches which support the vaultings, and which are to be seen in the two interior views, should have been re-erected. Neither is it possible that any alteration in the form of the arches should have taken place ; because, had they been originally semicircular, there could not, on account of the floor of the vaultings above, have been sufficient space for their height, if they were to have been altered to the pointed arch of their present proportion.

\* In the external view of the front, directly over the entrance-door, is seen carved in stone a very large circular rose, to fill up the space over the door between that and the summit of the building. Its appearance, on examination, will immediately strike any one as the probable hint for the large circular windows, which are often seen at the end of the transepts of a Gothic cathedral.

On every ground, therefore, this instance seems to merit implicit confidence; and as such it is here produced.

Of the two internal perspective views above mentioned, the reader will find exact copies in Plates I. and II. of the present work. These plates have been engraved from drawings made by Mr. Henry Inwood from the book itself; which, in the month of October 1812, was borrowed from a friend for this express purpose. In Plate I. is a representation of what appears to be a kind of vestibule to the church, taken from the side of the entrance-door. Plate II. contains the two sides of the nave \*. On these specimens it must be

\* The church, or dome of Sienna, which was consecrated by pope Alexander III. in 1180, and was consequently begun several years before, has a reticulated vaulting of pointed arches, but unequal in size.—Della Valle, *Lettere Senesi*, vol. ii. p. 17. Whittington, p. 87, speaking of the church of St. Germain des Prez, says, that the arches at the eastern end are pointed in consequence of the arrangement of the pillars; which being placed in the bow nearer each other than where the colonnade proceeds in a straight direction, the arches which rise from them, when brought to an equal height with those of a round shape, become necessarily pointed; and this is among the number of instances where the pointed arch was used from accident and necessity, before it became an object of taste. On this passage he inserts the following note, referring to the word Taste. The same circumstance occurs in the crypt of St. Denis;—see Part II. c. 3; in the choir of the church of La Charité sur Loire, and at the east end of Canterbury cathedral, built between 1180 and 1185; where “the arches are some circular, others mitred; for the distances between the pillars here diminishing gradually as we go eastward, the arches being all of the same height, are mitred (i. e. *pointe*!), to comply with this fancy; so that the angles of the eastern ones are very acute.” Gostling’s *Canterbury*, p. 224. This same author, Whittington, p. 108, says

remarked, that they exhibit the style of architecture of the nave of a Gothic cathedral of the later period ; with this only difference, that the upper arches are semicircular, and the lower piers are combinations of regular Corinthian columns in one instance, and as regular Corinthian pilasters in the other, instead of containing in both cases the clustered column.

Three years after the commencement of the rebuilding of the abbey-church of Clugny, the first crusade took place ; an event of such general effect throughout Europe, that perhaps none ever exceeded it in the extent of its influence, excepting only the first introduction and establishment of Christianity itself. It produced a total change in the manners, customs, and pursuits of the inhabitants of Europe ; and to it some have attributed, though without reason, the origin of Gothic architecture ; a circumstance which requires that some of the events which gave rise to the undertaking, should be here more particularly noticed.

The feudal system, which had long prevailed in Eu-

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in a note, " The pointed arches in the chevet (a term by which he describes the sweep made by the columns at the east end of a Gothic building) of St. Germain des Prez, erected at the beginning of the eleventh century, have been already noticed. Another example of the same arrangement is seen in the Benedictine church of La Charité sur Loire, built towards the close of the same century : a curious and interesting monument of Lombard architecture." Page 109, he says, speaking of St. Denis, that the columns erected by Suger are of the Lombard style, but the pointed arch occurs in every part of his work. And lastly he mentions, a little further on, that the chevet of St. Denis was indisputably finished in 1144.



rope, together with those causes which had rendered arms the usual profession of the nobility, had, in the course of time, been productive among them, as they necessarily would, of a ferocious and turbulent temper. This led them to seek redress for private injuries, either real or supposed, not from the interference of the law or civil authority, but from private war, which was often attended with fatal consequences to the greater part of the followers and adherents of both parties \*. All efforts to eradicate this destructive principle of private war, had proved ineffectual, till Gerbert, archbishop of Rheims, who died pope, by the name of Sylvester II. in 1003, in a circular letter dispersed throughout Europe, suggested the expedient of a crusade †. His view seems to have been, by changing the object to which this superabundant fury was directed, to secure the peace of Europe; and he probably foresaw what was indeed the ultimate consequence when the crusades did actually take place, that in the contest the more turbulent chiefs were either likely to fall, or else to be so much impoverished by the expense of maintaining their numerous followers and dependents, of whom their army must consist, that their influence would in future be too weak to

\* Robertson, in his Introduction to his Life of Charles V. which occupies the first volume, and professes to treat of the feudal system and its consequences, has a great deal on this subject. The reader who wishes for the best information on the feudal system will do well, however, to consult Pasquier *Recherches de la France*, which he will find to have been the foundation of the principal part of Robertson's account, though unacknowledged, except, perhaps, by a reference for one or two facts.

† Spondani Epitome, vol. ii. p. 381.

create any considerable disturbance. Although his proposal was not then embraced, it is yet found that, so early as the year 1064, seven thousand men went from Europe to the Holy Land \*, apparently to recover it from its then possessors. Spondanus terms it a celebrated pilgrimage to Jerusalem, and attributes it to their ostentatious display of their wealth, which excited the rapacity of the barbarians, that scarcely two thousand returned to their own country; but it is surely more probable, especially as they appear to have been under regular leaders, that their object was as here stated. In 1095 pope Urban II. seems to have adopted Gerbert's idea; fully sensible of the additional power and influence which the papal see would acquire from a crusade; for in consequence of letters from the patriarch of Jerusalem, brought over by an enthusiast, known by the appellation of Peter the Hermit, he summoned a council to assemble at Clermont in France. At this council, in the year 1095, the undertaking of a crusade was suggested and recommended by the pope, and unanimously, as it is said, agreed upon †. The success of this first, or the subsequent crusades, it is foreign to the purpose of this work to relate, and, indeed, they are well known to all who have an adequate knowledge of history; but the effect of these expeditions on the science of architecture was this, that, as they tended to render the profession of Christianity fashionable, many persons were induced to bestow large sums in the

\* Spondani Epitome, vol. ii. p. 432. Florence of Worcester, edit. Francof. 1601, p. 632. This latter author also speaks of the ostentatious display of their wealth as the cause of their destruction.

† Spondani Epitome, vol. ii. p. 476.

erection of churches founded by themselves, or in contributions for the furtherance of such undertakings as had been already commenced by others. In addition to this, the crusades held out a further inducement, by exhibiting to the individuals of the numerous armies at different times sent to the Holy Land from all parts of Europe, the splendid edifices of Constantinople and other cities through which they passed in their way to the spot where the whole force was appointed to assemble. This circumstance, accompanied with the extravagant encomiums which those who returned from the crusades bestowed, when they reached their own country, on the buildings which they had seen in their journey, excited, in the different nations of Europe, an emulation to rival, or, if possible, to surpass, cities so celebrated, by structures of at least equal, or superior magnificence and beauty. In these qualities alone could there be any competition; for no edifice has been produced from the Holy Land or Constantinople, that could be justly considered as the prototype of the Gothic style: and it is admitted, that the observations of learned and inquisitive travellers do not countenance an idea that it sprang from those places \*.

\* Bentham's Preface, as inserted in *Essays on Gothic Architecture*, p. 75. From the instance of the abbey of Clugny before given, it should seem that the system of Gothic architecture was settled before the first crusade took place; and the only change, if any, which the crusade could have produced in the architecture of Europe, appears to have been, that, by giving the persons engaged in it an opportunity of seeing the church of the Holy Sepulchre at Jerusalem, it might have been the occasion of introducing into Europe the idea of the clustered column which occurs in that edifice.

Felibien, p. 195, mentions an architect of the name of Marco Juliano, as living about the year 1120; but the only work which he attributes to him, is the hospital-general at Venice, which he erected at his own expense. He also observes, that Domenico Morosini, who was elected doge of Venice in 1148, was well skilled in architecture; but says it does not appear that he was engaged in conducting any building. He, however, caused several to be erected, and, among others, the tower of the church of St. Mark, which Buono, one of the most skilful architects and sculptors of the time, constructed about the year 1154. This workman also erected some buildings at Ravenna, Naples, Arezzo, Pistoia, and Florence\*.

Vasari, in the Preface to his *Lives of the Painters*, edit. Della Valle, 8vo. Sienna, 1791, vol. i. p. 227, speaking of the baptistery of St. John at Pisa, says, on the authority of an ancient account-book, relating to the building of the dome or cathedral of that city, that this baptistery of St. John was erected in the year 1060; but Della Valle, though he has permitted the passage in Vasari to stand in his edition without any note, has yet, in his *Lettere Senesi*, vol. ii. p. 18, asserted that, on a pilaster in this baptistery, is a Latin inscription which ascertains that it was founded in the month of August 1153. This disagreement (to reconcile which no means have been found) has been already remarked, p. 94, and has made it requisite that the edifice should be noticed in each period. Both accounts can scarcely be admitted, as it seems difficult, con-

\* Felibien, p. 195.



sidering the strength and solidity of the buildings then erected, to conceive, that in so short a space as a century there should have been any necessity or inducement for rebuilding it. The edifice is, however, confessed by Della Valle to be one of the best and most beautiful of that and the two succeeding ages, and a correct judgment of its style may be formed from the specimen, Plate VII. Fig. 2, of this work, which is copied from a larger print engraven by Jo. Hieronymus Frezza from a drawing of Joseph and Francis de Milanis of Pisa, and inserted in the *Theatrum Basilicæ Pisanæ*. This specimen is of the greater importance in the present inquiry, because many of the particular characteristics which were afterwards introduced into the Gothic style, are here observable; such, for instance, as pinnacles, crockets on the ribs of the dome, and two arches comprehended under one pediment.

The history of Venice, says Felibien, mentions two architects whose names are unknown, whom, about the year 1178, the doge Sebastiani Ziani procured to come to Venice, the one from Lombardy\*, and the other from Constantinople. The first caused two columns of extraordinary height, which he set up in St. Mark's Place, where they still stand, to be transported from Greece to Venice. After this he erected a wooden bridge at the spot now called the Rialto, and executed for the Venetians so many works, that they assigned him a considerable pension for the remainder of his life.

\* Milizia, p. 144, says, that some persons have called this architect Nicola Barattiero.

The second architect rebuilt the church of St. Mark, which is more esteemed for the richness of the material and for the delicacy of the work than for its size. It is of marble, decorated with precious stones internally, and gilt externally; for which reason it is called the Gilt Church: besides being embellished with an infinite number of ornaments in sculpture on all sides; so that the Venetians thought that nothing more magnificent and beautiful could be executed \*.

Felibien says, he is unable to name any other architects who worked in different places during the twelfth century; but that the Italians reckon of this number Bonanno of Pisa, a skilful sculptor, and a person named William, whom Vasari thought a German. These two workmen, about the year 1174, built the tower or belfry at Pisa, which is still in existence, but which, from a failure in the foundation, has so considerably sunk on one side as to be six cubits out of the upright. Bonanno executed several other undertakings in the environs of Pisa, and still continued to work in the year 1180 †.

The popes, who had by that time in some measure established and secured the peace of the church, began, about the year 1122, to cultivate the arts. Calixtus II. repaired the churches, aqueducts, and walls of Rome, built the church of St. Nicholas in the pontifical palace, and caused several places in the ecclesiastical state to be fortified. Among those of his successors who were most attached to architecture, Eugenius III. caused the portico of Santa Maria Maggiore to be rebuilt.

\* Felibien, p. 196.

† Ibid. p. 197.

Anastasius IV. adorned the Rotunda with very rich chapels. Adrian IV. rebuilt the city of Orvietto, which was deserted and almost entirely ruined, and caused several castles near the lake of St. Christina to be fortified: among others, was that of Radicophani, about the year 1175, which he rendered almost impregnable. Alexander III. in his time saw a new city, called Alexandria from his name, built at Roureto on the river Taro. Lucius III. and Urban III. his successor, have also left many buildings, as well as Clement III. who caused the cloyster of St. Laurence without the walls of Rome to be built, and repaired St. John de Lateran. Celestin III. caused several magnificent edifices to be erected, in which the progress which architecture then made at Rome begins to be perceptible; and Innocent III. employed a skilful architect and sculptor named Marchione\*.

Sugger, abbot of St. Denis, merits to be considered as one of the most intelligent persons in architecture that appeared in the twelfth century. He caused the church of St. Denis to be rebuilt and enlarged, and himself took the principal conduct of the work, which he began about the year 1140, and finished in less than ten years, with extraordinary magnificence, as may be learnt more particularly from the description of it which he himself has given †.

Mr. Whittington, in his Historical Survey of the ecclesiastical Antiquities of France, 4to. edit. p. 46, says, "In the course of the twelfth century the pointed arch began to show itself in the edifices of France; an

\* Felibien, p. 198.

† Ibid. p. 199.

innovation which was so universally admired and adopted, that, in a short time, the ancient Roman or Lombard method was entirely discontinued, and a new character of building, conceived in a different taste, and founded upon other principles, sprang up, and spread itself over the greater part of Christendom. Among the earliest instances of the appearance of this new style in France, we may remark the works of the celebrated Suger, abbot of St. Denis, which were begun in 1137." In p. 49, the same author adds, "We have already remarked, that the architecture of France underwent a total change in the course of the twelfth century. During this period it exhibited three different characters; at the beginning of the century, the old Lombard mode was in practice; towards the middle this became mixed with the new fashion of the pointed arch; and before the end, the ancient heavy manner was every where discontinued, and the new, airy, unmixed Gothic universally adopted."

The fact here related, that the works of abbot Suger are specimens of the modern Gothic style, cannot be justly doubted, because it is asserted by one who visited the building of which he speaks, and who certainly appears, from his book, to have been a competent judge. Nor can it be contended, as some would be inclined to suggest, that these parts have been rebuilt, because no evidence of any such fact is known to exist. Felibien, who mentions the original erection of this monastery, and its subsequent rebuilding by Suger, never notices that it was again in any part reconstructed. Besides, it is next to impossible to conceive, that when so much depended on the fact, whether these edifices were or were



not in their original state, Mr. Whittington could have been so incautious as not to have obtained from some of the members of that endowment the fullest satisfaction that the fabric had not been altered.

Those few persons who contend that the discovery and first use of the pointed arch is attributable to Henry of Winchester, the founder of the hospital of St. Cross at Winchester, will, no doubt, be prompt to observe, that the date of the rebuilding of the church of St. Denis by abbot Suger, whether placed, according to Whittington, in 1137, or to Felibien, in 1140, is posterior to the erection of the hospital of St. Cross, which was begun in 1136. To this it is answered, that the church of St. Germain des Prez, erected in the beginning of the eleventh century, and the Benedictine church of La Charité sur Loire, built towards the close of the same century, are both earlier instances of the use of the pointed arch \* than the hospital of St. Cross; and consequently this last could never have been what the advocates for the above opinion imagine. If any more examples are necessary, the church of the abbey of Clugny may be mentioned, in which, together with the pointed arch, all the most striking features of the later Gothic style, as exhibited in the internal architecture of such structures, were introduced, with the exception only of the clustered column. The church at Clugny was erected in 1093 †, or at least begun in that year, which is forty-two years before that of the hospital of St. Cross was

\* Whittington, p. 87 and 108. † Spondani Epitome, vol. ii. p. 474.

commenced, and there can be no pretence for suggesting that it has since been rebuilt.

The church of the abbey of Clugny has furnished a complete example of the later Gothic, with the exception only that the columns and pilasters are Corinthian instead of the clustered Gothic, and that the upper arches are semicircular; nor is this the only instance, as the church of St. Denis is a decidedly Gothic structure of the same style also. These are sufficient to fix the æra of the introduction and establishment of this style in France. Of course it is needless to trace particularly the history of erections either there or elsewhere to a later period, since it is evident that what was once known there might easily be transplanted to Italy, England, and other countries. All that is necessary will be to mention a few facts, as tending to show at what time it became settled in each.

In Italy, then, it is to be observed, that the dome of Sienna, which was consecrated in 1180, is known to contain pointed arches \*, and, probably, is of nearly the same style of architecture as the church of Clugny. Vasari, vol. i. p. 253, seems to attribute the

\* Della Valle, *Lettere Senesi*, vol. ii. p. 16 and 17. The same author, vol. i. p. 196, in a note, speaking of a bell-tower of this church, says, that about the time of Frederic I. it is supposed that pointed arches came into use, and that these were introduced after its erection into all the sides of the church of Sienna; but the fact, he says, is, that these arches existed before Frederic, and that they were not placed there in compliance with the fashion, otherwise every part of this church would have had pointed arches. The emperor Frederic I. died in 1190, after a reign of thirty-six years (*Spondani Epitome*, vol. i. p. 600); which would carry its commencement back to the year 1154.

introduction of the clustered column, and some of the ornaments of which the later Gothic consisted, to Marchion d'Arezzo, who was appointed architect to pope Innocent III. about the year 1200 \*; for, speaking of the church erected by this architect at Arezzo, the year in which that pope died, which was 1216 †, he says, that Marchion placed in the front three orders of columns one above another, very much varied, not only in the foliage of the capitals, and in the bases, but also in the shafts of the columns, some being thick, others thin, some standing two and two, and others four and four together. Some were encircled with carving like a vine; and some figured with a variety of subjects. He also placed there a multitude of animals of various kinds, which support the weight of these columns with the middle of their backs; and the whole is produced with the most strange and extravagant inventions that can possibly be conceived, and not only far from the commendable order of the antique, but from all just and reasonable proportion.

Felibien, citing as his authority the above account of Vasari, says, that the front of this church contained three ranges of columns one above the other; that these columns were of two different modules, either very thick or extremely slender, covered with sculpture from top to bottom, placed two and two together in some places, and four and four in others, and supported chiefly on a kind of consoles representing different ani-

\* Felibien, p. 203.

† Spondani Annalium Baronii Continuatio, vol. i. p. 65.

mals carved with much art and labour, though in a very capricious style.

After this he proceeds to this effect : It was thus that the most skilful architects of Italy at that time acted. As there were few who had not some practice in the art of sculpture, they affected to fill their buildings with it, and seemed to make the perfection of their art consist in nothing but in the delicacy and multiplicity of their ornaments, without giving themselves any concern as to the proportions of the orders, or the principal part of the rules which the ancient Greeks and Romans had so carefully studied. He says, the same opinion ought to be entertained of the architects of France, Germany, and England ; since the considerable buildings which are to be seen in each of these different places have nearly the same defects as have just been noticed in those of Italy \*.

From this it should seem that Felibien thought this church had been in some measure the guide for other erections, or at least that it was of the same style as the later Gothic, which soon after followed ; and, indeed, there is every reason, from the facts which he mentions, to believe it really was so.

Felibien, speaking, p. 206, of Robert de Lusarche, an architect who appeared in France in the reign of Philip Augustus, says, it is certain that this person in the year 1220 began to build the cathedral of Amiens, under bishop Evrard. After he had finished some part, another architect named Thomas de Cormont continued the work, but still left something more

\* Felibien, p. 203.



to be accomplished, which his son Renault completed. The same author says, that with reason this church passes for one of the most considerable of that time. The choir and the nave are about 22 toises (or 132 feet) high, 7 toises (or 42 feet) wide, 60 toises (or 360 feet) long; and 30 toises (or 180 feet) is the extent of the cross. The side-aisles are near 3 toises (or 18 feet) wide, by 7 toises (or 42 feet) high; they surround the nave, the choir, and the cross, and are accompanied with chapels out of the building; which shows that the whole church is no less than 70 toises (or 420 feet) long, being, besides, as much esteemed for the beauty and excellence of the work, as for its great extent. For it may be said, there is very little Gothic work so perfect, since no other defect is observable in it than the too great height of the nave in proportion to its width, which is also an usual fault in the principal part of the ancient churches of France.

About nine years after the commencement of the cathedral of Amiens, the church of St. Nicasius at Rheims was, in 1229, begun to be rebuilt by an architect named Hugues Libergier. He finished the portico, and the nave as far as the cross, and died in 1263\*. Of this church as it lay in ruins in 1801, an east view was engraven and published by Mr. B. Howlett of Vauxhall Walk, in 1805, together with a view of the west front, and a brief letter-press account. In this it is said, but without citing any authority, that the present church was erected after the year 1300; that when the view was taken in 1801, the west front was totally

\* Felibien, p. 207.

destroyed by Santaire †, to whom it was sold for a very trifling sum during the revolution ; and that its original dimensions were 320 feet in length, 90 feet in breadth, and 100 feet in height. The assertion that the church was erected after 1300 is not correct. Marlot, who was himself a doctor in divinity, and prior of St. Nicasius at Rheims, has, at the end of the first volume of his *Metropolis Remensis Historia*, inserted, p. 613, a view of the front of the church of St. Nicasius, and an history of that edifice. This he entitles *Epitome Chronicon S. Nicasii Remensis*, and it is evidently an abridgement of authentic documents in the possession of the members of that endowment. To all of these, he himself, by his station, most certainly had access ; and he has accordingly cited the authority of manuscript books and original instruments in support of his assertions, several of which latter documents he has inserted verbatim. In page 636, is a chapter in which he relates the history of the edifice standing in 1667, when his book was printed ; and in this he says that the first stone was laid on the second day after Easter in 1229, and that it was built by two architects : the former, Hugh Liber-gier, began it in 1229, which is proved by the inscription on his tomb, and died in 1263 ; the latter, Robert de Coucy, was employed on it so late as 1297, and died in 1311. Every one knows that the age of a building must in all cases be computed from its commencement, and not from its termination. Before the foundation-stone was laid there cannot be a doubt that the designs for the whole structure must have been settled ; and

† The name is in the original so spelt, but is conceived to be really Sans-terre, or Lack-land.

though, in the mode of carrying it on, some variations may perhaps be made by subsequent architects in the form of the arches and some other particulars, yet even these must be rendered subordinate to the original design, and must not introduce changes in the most material regulations; such, for instance, as the general proportions of the whole, the distance from column to column, the breadths and lengths of the aisles and nave, and other essentials. Were any but this mode of computation adopted, it would be necessary to wait for the completion of an edifice, before it could be decided in what century it was to be placed; and in that case, how should those fabrics be estimated, which, though begun and carried on for centuries, have perhaps never been finished? which was the fact as to many structures in this kingdom at the time of the dissolution of religious houses. Of this number the abbey-church of Westminster was one which, though begun in 1245, was not completed till the erection of the towers in 1735. No reasonable man would ever think of contending that the age of the structure is to be dated from this last period; nor is it, in fact, the custom with well-informed persons to reckon in that manner. The measures of the church of St. Nicasius, as given by Marlot, vol. i. p. 637, which are probably more correct, differ considerably from those in the account which accompanies Mr. Howlett's print: for Marlot says the church is 305 feet long, 130 wide, its height from the pavement 95, and the columns are 28 feet asunder.

This building, the church of St. Nicasius at Rheims, is a decided instance of the establishment of Gothic

architecture, in that style which consisted of pointed arches, clustered columns, and all those peculiarities by which it is distinguished from the Grecian. And unless the cathedral at Amiens, erected in 1220§, be an instance of the pure and unmixed Gothic, which, as yet, has not been ascertained||, the earliest structure of that kind now discovered in France is this church of St. Nicasius at Rheims, which was begun in 1229¶.

The first instance of the pure and unmixed Gothic in England, and indeed, as Bentham says\*, the only one which never had any intermixture of the former style, is the cathedral church of Salisbury, begun in 1220, and finished in 1258†. It is clearly subsequent to the church at Arezzo, before mentioned, as that was commenced in 1216; and though it is prior to the church of St. Nicasius at Rheims, it still cannot justly be hence inferred that this style was used earlier in England than in France. On the contrary, throughout the whole history of architecture, it uniformly appears that the style of building in this country, on many occasions the materials, and frequently the artificers to employ them, were all derived and procured from Italy

§ Felibien, p. 206.

|| Whittington, p. 130, intimates an inclination to compare the cathedral of Rheims with that of Salisbury, but prefers comparing this last with that of Amiens. He has given no reason for this preference; but the fact is, that in the cathedral of Rheims, the arches in the upper range are round-headed, while those below them are pointed. Whether Amiens resembles Rheims in this, is not known.

¶ Felibien, p. 207.

\* Bentham's Preface, in *Essays on Gothic Architecture*, p. 73.

† Ibid. p. 72.



and France. Of this, repeated instances have been given in the course of the preceding pages ; and though no earlier examples have yet been discovered in France, which has been owing to the difficulty of procuring correct and minute intelligence, it cannot be doubted that an industrious and intelligent antiquary would certainly, on an actual survey carefully made by himself, find many such structures, both in France and Italy, which have been hitherto unobserved.

In consequence of what has been already said on the subject of Gothic architecture in this inquiry, it manifestly appears that the Gothic style was not wholly an original invention or discovery of forms before unknown. On the contrary, it was rather a combination of a variety of peculiarities which had at different periods been separately introduced into the then existing style of architecture, and a judicious adaptation of each to the others. As a proof of this, it may be observed, that the idea of constructing a Gothic cathedral of three stories, and with a vaulted ambulatory over the side-aisles of the nave, was in all appearance derived from the circular vestibule of the church of the Holy Sepulchre at Jerusalem. This will be evident to any one who compares the representation of this latter, in Plate VII. Fig. 1, of this work, with any of the Gothic cathedrals now remaining in this and other countries. The clustered column was, no doubt, suggested by those which support the cupola over the choir in the same church, the reason for which form has already been explained; and an accurate representation of them will be found in Plate VI.

The chapel of the Virgin Mary, which often occurs at the east end of Gothic cathedrals, was probably an imitation of the chapel of the empress Helena, erected at the east end of the same church of the Holy Sepulchre ; and the other chapels surrounding the ambulatory at the east end of the choir in such edifices were in all likelihood introduced in consequence of the similar appearance of this. The plan of the church of the Virgin Mary at Bethlehem, which Bernardino, p. 1, asserts to be the venerable church erected by St. Helena, and which plan is from him, p. 8, given in Plate IV. so nearly resembles that of some Gothic cathedrals as to render it probable that the idea might have been borrowed from this edifice.

The circular window at the end of each transept in the later Gothic cathedrals, might possibly be derived from a large carving of stone representing a rose, in the west front of the abbey-church of Clugny ; as this ornament, evidently intended only to fill up a space which would otherwise have appeared too naked and vacant, is so like such a window in form, and occurs so very nearly in the same situation.

The pointed arch, a geometrical form, the principles of which occur in the writings of Euclid, will be found, as formed from his first proposition or problem †, in Plate III. Fig. 4 ; and with an explanation unincumbered with mathematical and scientific terms or modes of stating it, in the letter-press explanation of the Plates. This form had been introduced in the side-aisles of the nave of the dome at Pisa, erected in 1016 §, and used

† Simson's Euclid, p. 7.

§ Milizia, p. 140.

in the church of the abbey of Clugny, built in 1093 || ; and indeed such was its superiority in point of convenience over the semicircular arch, and so easily might it be accommodated to any space or height, that it is by no means wonderful the architects should afterwards have become so extremely fond of it as they appear to have been. For the semicircular arch could only be struck from a centre exactly in the middle of the base line which ascertained its width, and would always produce a curve in the same proportion, namely, with an elevation equal to no more than one half of its width; but in the case of the pointed arch, the centres for striking it might be abundantly varied, several instances of which will be given in a subsequent page, according as a greater or less height in proportion to its width was required. Where original materials, and not fragments from former edifices, were employed, the intermixture of the pointed with the semicircular arch in the same building, probably arose from the inaccuracy of the workmen, who, not observing the correct measures in the other parts, and having exceeded the due extent, were compelled, in order to make the whole elevation suit the foundations which had been laid, to place some of the columns nearer each other than the due distance. For whoever will take the pains to measure the extent of arches and the distances between the columns in some of the Gothic cathedrals in this country, which has been done for the purpose of the present work, will find a great difference in those spaces which appear to the eye to be the same. Nor was the principle of the two sorts of arches so very dissimilar as

|| See the inside views of that church in Plates I. and II.

some persons may be inclined to suppose; for the semi-circular arch of course consisted of a semicircle, while the pointed arch was constructed of two segments of a circle. The latter had also been employed by the workers in mosaic so early as the fifth century, as may be seen from two specimens referred to in the note; and occurs adopted in architecture in an oratory in the Vatican church erected by Symmachus ¶. Whether this were the pope of that name, or Symmachus, one of the architects of Theodoric king of the Goths, is of little importance to its age; for pope Symmachus, who was elected in 498, died in 514 \*, and Symmachus the architect in 526 †.

Croquets and pinnacles might have been, and probably were, suggested by the representations employed by the workers in mosaic in their ornaments and decorations, as may also be observed from the before-mentioned specimens, Plate III. Fig. 1, 2; and the first introduction into Italy of these and the other peculiarity of comprehending two arches under one pediment, seems to have been in the instance of the baptistery of St. John at Pisa; which, according to Vasari, was erected in 1060; and, as Della Valle relates, in 1153. The former of these dates would be about fourscore years prior, and the latter about twelve or fifteen subsequent, to the rebuilding of the church of St. Denis.

And lastly, the intricacy and luxuriance of the tracery-work which often occurs in Gothic erections, was the

¶ See Plate III. Fig. 1, 2, 3.

\* See Onuphrii Panvinii Pontificum Chronologia, at the end of Platina De Vitis Pontificum, fol. Coloniae, 1574, p. 15.

† Felibien, p. 139.



consequence of that love for exuberance of ornament and decoration which had been increasing from the time of Constantine downwards, and was so conspicuously shown in the church of Santa Sophia at Constantinople, some part of which may be justly concluded to be of the age of Constantine, and the rest, but by no means the greater portion, of the time of Justinian.

It has been matter of surprise to some persons, that at a period when the communication between various countries was by no means so easy or practicable as of late years it has become, the inhabitants of one should have been so well informed as they appear to have been in regard to what buildings were erecting in another, and their peculiar excellencies and recommendations. In answer to this, it must be remembered, that journeys on the concerns of their convent were frequently undertaken by the monks of the different monasteries, and that in their way there were no inns to receive them; they therefore proceeded on from one religious foundation to another, in all of which their habit entitled them to apply for assistance, and secured them the certainty of finding lodging and refreshment. Thus they pursued their journey; and on such occasions these itinerant monks could not fail of hearing, at one convent and another where for a time they happened to reside, all the events which were passing in that part of the country through which they were travelling. Of these, and, indeed, of the affairs of whole kingdoms, the monks seem to have been so well apprized, that, besides them, there are few ancient historians; and almost all of our early chronicles were written by them within the walls of their respective

monasteries. These facts are so well known to all properly conversant in ecclesiastical and literary history in general, that it would be superfluous to cite authorities. Another source for acquiring intelligence presented itself from the circumstance of the general councils so frequently summoned by the different popes, and which brought together from all the parts of Europe the ecclesiastics of the higher orders. Persons like these must of course each be well acquainted with what events, especially in ecclesiastical matters, had taken place in his own diocese; and, to give one instance, such a general council was in the year 1131 held at Rheims, by pope Innocent the Second, at which were present the archbishops and bishops of France, Germany, Aquitain, England, and Spain\*. Aubrey also says, he had been told by Sir William Dugdale, that about the time of king Henry the Third the pope granted a bull or patent to a company of Italian architects to travel from place to place, and build churches†.

To the before-mentioned abböt Suggester is probably also owing the introduction of painted glass into ecclesiastical structures; or at least the adoption of a former practice, which had been rarely used in early edifices before his time. This, indeed, seems not to have been optional, but in some measure necessary, to obviate an inconvenience which perhaps had not been foreseen when the lighter style of Gothic was first in-

\* Spondani Epitome, vol. ii. p. 524.

† Antiquarian Repertory, vol. iii. p. 45, from Aubrey's manuscript at Oxford.

troduced ; for in buildings of this species the apertures for windows were so many and so large, as to admit, as it was soon discovered, too great a portion of light \*. To abate, therefore, the glare, without entirely excluding the light, the expedient of glazing the windows with painted glass was adopted, which, at the same time that it prevented the evil, was in itself also a decoration. At first the subjects represented were, it is believed, little more than lattice-work, ornamented with a variety of colours, disposed in a multitude of fanciful shapes. By degrees the artists proceeded to the representation of the human figure, intended for that of some favourite saint, some king who had been either their founder or a great benefactor to the building, or some bishop or abbot by whose means and solicitation the necessary contributions had been obtained ; and at last they advanced to the delineation of large histories from the Old and New Testament, consisting of groups of figures as large as the life. To the introduction of single figures of saints, kings, bishops, or abbots, as subjects for painted windows, it is not impossible that a circumstance apparently very foreign might have led ; and that the idea might have been suggested from observing, as the monks had frequent occasions and opportunities of doing, the splendid appearance which the dead body of an abbot, a

\* A similar inconvenience was found in some of the offices in the Bank soon after their erection by Sir Robert Taylor ; and the glare of the light on the white paper on which they wrote was soon found so prejudicial to the eyes of the clerks, that, to prevent injuring their sight, the common glass in the skylights and other windows was taken out, and replaced by that which had been previously ground.

bishop, or a king, made when laid out in his stone coffin, dressed in his richest habiliments and ornaments, previously to his interment. Certain it is, that a body so dressed and placed in a stone coffin, gives a very perfect idea of a compartment of a window, with a whole figure painted in it, represented as placed in a tabernacle or niche, and that the form of the hollows for the head and shoulders very much resembles that of the under part of the canopies with which such figures are accompanied in painted windows.

So early as the sixth century mention is made of painted glass, which at that time seems to have been more a matter of ornament than of necessity, as it afterwards proved. Fortunatus, who lived towards the end of the sixth century, in a poetical description which he then wrote of the church of Notre Dame at Paris, gives a pompous account of the painted glass; and in the life of St. Benedict, abbot of Wirmouth, a monastery in Scotland, where he died in 690, it is noticed, that, having occasion to rebuild his abbey, he went into France to collect workmen to construct a church for him, and glaziers to glaze that and its cloisters: Bede, the disciple of Benedict, also speaks of it in his works\*.

The earliest instance of the use of painted glass in France after the introduction of this lighter style of architecture, seems to have been that of the abbey of St. Denis, built by abbot Suger, in 1150. Engravings from the painted windows of this abbey are to be found

\* Le Noire Musée des Monumens Français, Histoire de la Peinture sur Verre, p. 14.



in Le Noire's *Musée des Monumens Français, Histoire de la Peinture sur Verre*, p. 63, accompanied with the following particulars.

Abbot Suger bestowed a profusion of money in the decoration of his church; and on consulting the manuscript Latin history of his government, the detail at full length will be found of his expenses for the abbey of St. Denis, and of the pains which he took for the execution of these glass windows. It is there said, that he had carefully sought after glass-makers, and such as compounded it with other exquisite materials, namely, sapphires\* in abundance, which they pulverized, and melted among the glass, to give it an azure colour; that he had procured from foreign countries the most skilful and excellent masters to make the painted glass windows of the chapel of the Holy Virgin; that such was the devotion, when he made these windows, among those of all ranks, that he had money in plenty, so that he could pay his workmen at the end of each week; that he had placed at the head of the undertaking a very expert master of the art, and one of the religious to oversee what was necessary, to take care of the artificers, and to furnish them from time to time with whatever they should want; and that the windows, on account of their superior ex-

\* The reader will see, from the circumstances mentioned afterwards in the text, and from a passage in the next note, that the sapphires here can never mean the stone known by that appellation, but only the blue colour, which Le Noire, p. 39, says was cobalt; and the words in the text can only signify, that, instead of being painted blue afterwards, the glass was rendered blue in the first making.

cellence and beauty, and the rarity of the materials of which they were composed, had cost a large sum of money. The passage, as given by Le Noire from the original manuscript, is on the present occasion to be found in the note \*.

To this account Le Noire adds, he is far from thinking that abbot Suggester did not give the sapphires † of which he speaks in the passage inserted in the note, but is of opinion that on this occasion the abbot was duped by the workmen; and his reason for this opinion is, that the sapphire is not fusible, that it cannot enter into the composition of glass, and that, even if it had this property, it could not preserve, and still less be able to communicate, its colour.

Unfortunately, Mons. Doublet, whose translation Le Noire professes to adopt, has most grossly misconceived the original passage. Suggester did not, in fact, mean the sapphire-stone, because the words he uses in both instances are, ‘the materials of the sapphires;’ and as the

\* Unde quia magni constant magnifico opere sumptuque profuso vitri vestiti et saphirorum materiæ, tuitioni et refectioni earum ministerialem magistrum constituimus, qui etiam admirandarum vitrearum operariis et materiam saphirorum locupletem administrabit, Le Noire, p. 39, has said, that the blue was cobalt which the painters on glass used; but it might have been ultramarine, which is obtained from powdered lapis lazuli. This, even now, is perhaps the most expensive colour of any, and would well warrant the term here applied, as being a rich material for the blues.

† It is not asserted, either in the passage of which Le Noire has before stated the substance, or in that inserted in the preceding note, which is taken from him, that abbot Suggester did give the sapphires; and for that, and the other reasons which the reader will find mentioned in the text, Le Noire’s suspicion of the dishonesty of the workmen is wholly unfounded.

sapphire-stone is a natural and not artificial or factitious production, no previous ingredients could possibly be wanted or used for making it. He only intended to express the materials for the sapphires or blue colours; and this is evident from Du Fresne's Glossary of the Latin of the middle and lower Ages, in which the Latin adjective *saphirinus* is rendered sky-colour, of the colour of sapphire, which, as he says, is described by Isidore as being sky-colour with purple. To support this interpretation, Du Fresne has given such instances as to leave no doubt of its accuracy.

The art of painting on and staining glass, and also the mode of preparing the colours, were some centuries since in high request, and carried, if the brilliancy of the colours be alone regarded, to a great degree of excellence. It has been supposed, that, at least as to the preparation of one colour, the ruby, the art has become since, in some measure, lost; and though a few late efforts have been made to recover it, the system is still in general certainly but little understood. It has, therefore, been judged expedient to insert at the end of the present work the substance of a very curious account of the process, highly deserving the reader's attention, but which, as occurring in Felibien's Treatise on Architecture, a subject apparently very foreign to such an inquiry, might not, perhaps, otherwise have come within his knowledge.

## CHAPTER VIII.

*An accidental Discovery of an anonymous Print—This Print, how traced to the Work for which it was engraven—The Book procured, and how—Cæsarionus's Translation of Vitruvius extremely rare—An Account of it.*

THE rise and introduction of Gothic architecture having been thus accounted for, the next object is an inquiry into its principles and proportions ; but before the commencement of any such undertaking, some circumstances are necessary to be mentioned, in order to ascertain the degree of authority to which the evidence to be produced is entitled. For reasons known to those already acquainted with the transactions, but immaterial to the generality of readers, it will be requisite, in stating these, for the present author to speak in his own person ; and, with this apology, it is hoped that the appearance of egotism, which could not be avoided, will not merit reprehension.

A few years since, while I was preparing the letter-press for a work which Mr. John Thomas Smith had undertaken to publish, and in which so much of the materials used in this as had then been collected was intended to have been employed, information was received from Mr. Smith that a friend of his, Mr. Kent, a sculptor, who then worked with the present Mr. Flaxman, could communicate



some important intelligence as to a book on the subject of Gothic architecture. Though I was fully aware, from experience, that such communications, from want of accuracy and precision in the relator, were very rarely to be relied on ; yet as it was found, after some time, that this person's assertions, as repeated at different periods to Mr. Smith, did not vary from what they had been at first, I thought it incumbent on me to obtain a personal interview with him, which Mr. Smith procured, and it took place at the latter's house accordingly.

At this meeting the account which he gave was, that he had himself many years before bought the book at a public sale by auction, and he named the place ; that there were several others in the lot, but that they were none of them particularized in the catalogue, the lot, which was the last in the sale, being only described as a parcel of various books. He further represented it as being in folio, a translation into English, and printed about the time of our queen Mary, the daughter of Henry the Eighth. No specific title of the work was given, though he mentioned the author's name, which, as endeavours are still using to procure it if possible, it is thought not requisite here to disclose ; and it is sufficient to say, that if ever it should be obtained, and it should contain, which there seems great reason to doubt, any intelligence which can be useful, after what on certain authority will hereafter be related, a further account shall be laid before the reader. After the purchase, Mr. Kent said he lent it to a friend, whom he named, but his name is not now recollected, and who, on application then made by

Mr. Smith for that purpose, recollected the book, and confirmed the account and description given by Mr. Kent ; but by some accident or other, which could not be accounted for, either before or after its return, it had been lost.

It is useless to describe minutely what was then stated as the nature of the work, or to give any idea of its contents ; for notwithstanding the length of time since the communication, and the exertion of all possible endeavours to discover it, the book itself, its title, the name of, or any facts relating to the author, have been sought for wholly in vain. From the foregoing circumstances it can scarcely be imagined that the whole is a fiction ; but it is probable that some incomprehensible mistake has been committed by the informant, and that either the name of the bookseller has been given instead of the author, or some other error equally fatal has occurred.

The above facts might not, perhaps, have merited notice, because it is evident no use can be made of such vague and uncertain intelligence ; but it was imagined some persons might have heard in general of the communication, and have wondered, had no mention been made of it, for what reason it was omitted. Subsequent discoveries have, however, rendered the loss of the book of no importance, by furnishing ample information for every purpose that can occur in the present inquiry, as will fully appear from the following circumstances.

About the month of January 1806, Mr. Manson, the bookseller of Gerard Street, bought, at a sale of books

at Mr. Christie's, a volume containing a collection of engravings principally by Albert Durer. On the cover was stamped the date 1637, which probably was the time when the collection was made \*. In a few days after the purchase he showed it to Mr. Smith, who, on turning it over, found in it a print without date, name, or mark of any designer or engraver, but representing a sectional view of a Gothic church, the geometrical construction of which was ascertained by circles, a square, an hexagon, and a number of triangles. Over its head was the following inscription in capitals: " Idea geometricæ architectonicæ ab ichnographia sumpta. ut peramussineas possint per orthographiam ac scænographiam perducere omnes quascunquæ lineas. non solum ad circini centrum. sed quæ a trigono et quadrato aut alio quovismodo perveniunt possint suum habere responsum. tum per eurythmiam proportionatam quantum etiam per symmetriæ quantitatem ordinariam ac per operis decorationem ostendere. uti etiam hec quæ a Germanico more perveniunt distribuentur pene quem-

\* A friend, who possesses very good means of intelligence, informs the author there is reason to believe, from circumstances, that this book of prints had been the property of the famous Earl of Arundel who lived in the time of Charles I. This volume, and some others, are said to have come last from Ireland; and it is not impossible that its contents might at one time have belonged to the famous Nic. Cl. Fabr. Peireskius, who was the author of an History of Gallia Narbonensis, and died in 1637.—Konigii Bibliotheca, p. 616. The collection of prints belonging to that person, or at least a great part of it, is known to have been bought some years after the decease of its owner, by the Earl of Arundel from Peireskius's then descendants.

admodum sacra cathedralis ~~ad~~ Mediolani patet. etc.  
P. M. C. C. A. P. Vi. Q; C. Ac Af. D. \*."

It was immediately evident to Mr. Smith, that this print would be of great use in the preparation of a work in which he was then engaged, and for which I had undertaken to furnish the letter-press; but though there was no reason for supposing it engraven by Albert Durer, it was thought not advisable to separate this from the rest. Mr. Manson, however, very kindly promised, what he as punctually performed, to obtain permission from any gentleman who might purchase the whole together, for Mr. Smith to make a tracing from it. The volume was afterwards sold to John Towneley, Esq. who, on Mr. Manson's mentioning the circumstance, very readily and kindly granted permission for Mr. Smith to make the tracing, and for me to see the book; and the tracing was accordingly afterwards made by Mr. Smith †.

On his showing it to me, both Mr. Smith and myself were of opinion its importance was such to the

\* At the head of the work Cæsar styles himself Cæsar Cæsarianus, Architecturæ Professor; and in his account of himself in a note, fo. 91, b, he says, *Meliori modo quo fideliter potui tuti quisti deci Vitruviani volumini ho translati: commentati & affigurati.* These initial letters should, therefore, certainly be read thus: *Per Magistrum Cæsarem Cæsarianum, Architecturæ Professorem, Vitruviique Commentatorem ac Affiguratorem, delineata (or descripta).* This, however, could not be known till after the book itself had been procured and examined.

† These circumstances attending the purchase of the book, and its ultimate passing to Mr. Towneley, I had from Mr. Smith at the time, and in consequence of Mr. Towneley's permission I have since seen the volume.



subject of Gothic architecture in general, that, if leave could be obtained from Mr. Towneley the owner of the original print, it ought to be published; and Mr. Towneley having, on application from Mr. Smith, very liberally given his consent, the latter determined to re-engrave and publish the cut with a letter-press explanation by me; but the execution of this intention was prevented by subsequent circumstances not material to be stated.

Observing that the inscription which ascertained it to be the church of Milan, contained at the end several initial letters only, I was led to suppose that among them might, perhaps, be found those of the name of the draughtsman. Of these the five first were P. M. C. C. A. which I imagined to mean *Per magistrum C. C. architectum*, whoever this C. C. might be.

On turning to Carlo Torre's *Ritratto di Milano*, 4to. 1714, which I had in my own possession, I found, p. 377, among the architects from time to time employed in the erection of the church of Milan or keeping it in repair, the name of *Cæsar Cæsarianus*, there called *Cesare Cesariano*; and from another passage in the same work, p. 376, I discovered that he had written a commentary on *Vitruvius*. From the Bodleian Catalogue I also found that a copy of the book was in that collection; and, at Mr. Smith's request, Dr. Gower undertook to forward a letter of mine to himself, as he accordingly did, to a friend of his, Dr. George Williams, Regius Professor of Botany, Fellow of Corpus Christi College, and Physician to the Radcliffe Infirmary, because it was uncertain whether a friend of my own was then resident in Oxford. The

object of my letter was to request the favour of Dr. Williams to inspect the translation, and ascertain whether it contained the cut which I described to him; and his answer, after consulting it, was, that it not only comprised that, but some other cuts of the same kind also \*.

All endeavours to procure the book, or a sight of it, in London, having failed, I suggested to Mr. Smith the necessity of a journey to Oxford to see the copy there; but wishing at the same time to examine some engravings in a printed work with drawings which I knew were existing there in one of the college libraries, I was desirous of procuring this latter for that purpose. Calling with that view at a bookseller's, where, two days before, I had inquired for the above-mentioned Vitruvius, I accidentally saw, lying on the counter, a manuscript catalogue of Latin books, and on opening it I found that, in one instance at least, Italian ones had been there intermixed with Latin; for the first article which attracted my observation was the very translation of Vitruvius of which I was in search; I immediately bought it; and the person in the shop, when she delivered it to me, observed, she remembered my inquiring for that book two days before, that at that time she had it not, but that it had come in since.

The volume is so scarce, that I at present know of no more than two copies, besides my own, existing in this

\* For this information the reader's thanks and my own are due to Dr. Williams, which he is desired accordingly to accept, as well as for an extract from a manuscript which he was afterwards so kind as to procure, and for an invitation to Oxford, to see the Vitruvius.

country ; and one of these two is that in the Bodleian Library. It is a large folio, 12 inches by 17, not quite two inches thick, and entitled, “ Di Lucio Vitruuio Pollione de Architectura Libri Dece traducti de latino in Vulgare affigurati : Commentati : & con mirando ordine Insigniti : per il quale facilmente potrai trouare la multitude de li abstrusi & reconditi Vocabuli a li soi loci & in epsa tabula con summo studio expositi & enucleati, ad Immensa utilitate de ciascuno Studioso & beniuolo di epsa opera.”

At the end of the book is a colophon, of which these words are part : “ Qui finisse Lopera præclara de Lucio Vitruuio Pollione de Architectura traducta de latino in uulgare : Historiata e Commentata a le spese e Instantia del Magnifico. D. Augustino Gallo Citadino Comense e Regio Referendario in epsa Citate : e del nobile. D. Aluisio da Pirouano Patricio Milanese”——  
“ e Impressa nel amœna & delecteuole Citate de Como per Magistro Gotardo da Ponte Citadino Milanese : ne lanno del uostro Signore Jesu Christo M.D.XXI.XV. mensis Julii.”

At the foot of the Table of Errata, quite at the end of the book, is an advertisement or notification of Augustino Gallo and Aloisio Pirovano beginning with these words, which sufficiently show that the translator and commentator was Cæsar Cæsarianus : “ Perche Cæsare Cisarano circa il fine de Magio del anno presente M.D.XXI. hauendo commentato e dato le Copie a li impressori per insino a l loco soprascripto [viz. to chap. vii. book 8 of Vitruvius ; or, to speak more minutely, to the back of folio 154], non obstante alchuna conuentione : se partite da Como : & lasso Lopera Im-

perfecta con grande dispendio nostro." And besides this, at the head of the work, Cæsar styles himself Cæsare Cæsariano, Citadino Mediolanense, Professore di Architectura, etc. ; and in the note, folio 92, b, he says of himself, " Meliori modo quo fideliter potui tuti quisti deci Vitruviani volumini ho translati : commentati & affigurati." The title at the beginning of the first chapter, which is in the following words, printed in capital letters, shows that the translation was the production of Cæsar Cæsarianus : " Di Lvcio Vitrvvio Pollione a Cæsare Augusto de Architectura Incomenza il primo Libro. Trauslato in Vulgare Ser-mone Commentato et Affigurato da Cæsare Cæsariano Citadino Mediolanense Professore di Architectura et c<sup>a</sup>."

The work is accompanied with about 240 cuts, including the initial letters of the several books and chapters ; and among them are inserted, at fo. 14, a, fo. 15, a, and fo. 15, b, and referred to from the commentary, three, which require to be noticed on the present occasion. The first is a ground-plan of the cathedral church of Milan ; the second, a sectional view of the elevation of its nave and side-aisles, including also a separate plan of the base and capital of the columns, an elevation of the capital, and some other ornaments ; and the third, a sectional view of the church as before, with the addition of an external representation of the transept \*. Of all these there will be occasion

\* See copies of the plan, the sectional view of the nave, and the sectional view of the church, with the external representation of the transept, in Plates VIII. IX. and X. in the present work.



to speak more particularly hereafter. The cuts were undoubtedly executed, as well as to drawing or design, as to engraving, by different hands ; though no names of engravers are mentioned ; but without question all prepared from Cæsar's own sketches ; for Aloisius Pirovanus, in an address entitled, "*Oratio Patritiis populoque Mediolanensi,*" which follows the table of chapters at the beginning of the book, says, that not without very great expense he had procured the drawings to be made by many excellent painters, and had in like manner employed no inferior artists to engrave the cuts as drawn and measured by compasses.

## CHAPTER IX.

*An Account of Cæsar Cæsarianus, the earliest professed Commentator on Vitruvius, an Architect but slightly mentioned by Vasari, and wholly unnoticed by all others who have written the Lives of the Architects.*

OF Cæsar Cæsarianus very little is mentioned by any biographer \*, though he has himself, in this Commentary, left several particulars of his history. Vitruvius having, in the first chapter of his sixth book, returned thanks to his relations for the education they had bestowed on him ; his commentator, Cæsar Cæsarianus, is induced to imitate his example in a case by no means parallel, as it is manifestly Cæsar's object to exhibit his sufferings, in order to attract compassion, at the time when he professes to conceal them. However, in a very long note on the above-mentioned pas-

\* Vasari, in his Life of Bramante, speaks of this latter person as having gone to Milan to visit the dome or cathedral, and says there lived there, at that time, Cæsar Cæsarianus, who was reputed an excellent geometrician and architect, who wrote a commentary on Vitruvius. In another part of the same life he mentions Cæsar as having been disappointed in his expectations of profit from his Commentary on Vitruvius ; as having become so morose and savage in consequence of his failure, that he would do nothing ; and, lastly, as having died more like a brute than a human creature. He gives no other particulars, and was ignorant of the time of his death.

sage in Vitruvius, he gives, fo. 91, a, the ensuing facts relating to himself.

His father, whose name was Laurence, was a man of considerable literature, and eminently skilful in the civil law, by which means he came to be employed in the business of the chancery of Bona Maria and John Galeazzo Maria Sfortia Visconti, duke of Milan \*. On account of these his merits, and by the advice of Ciccho Symoneta one of the ducal counsellors, these persons bestowed on him the office of the chancery of the chief-justiceship in Milan, of which he was a ci-

\* Bona Maria must have been the widow of the former duke Galeazzo Maria Sforza; for he, in 1468, married Bona, daughter of Lewis duke of Savoy. Galeazzo was assassinated 24th Dec. 1476, and she died in 1485. John Galeazzo Maria Sforza, who is here also called Visconti, was son of Galeazzo Maria and this Bona; and on the death of his father was placed under the guardianship of his mother and the secretary of state, Ciccho Symoneta; but Lodovico Maria Sforza, his uncle, called the Moor, compelled the duchess to quit Milan, and caused Symoneta to be beheaded at Pavia, though he was then seventy years old. As to the young duke, his uncle gave him a slow poison, of which he died at Pavia a few days after the entry of Charles the Eighth, king of France, into that city, 21st Oct. 1494. The ducal family of Visconti were in fact extinct on the death of Philip Maria Visconti in 1446; but as he left a natural daughter, Blanch, who married Francis Sforza, he in her right claimed and obtained the dukedom in 1446. It is probable, that, in consequence of her relation to the Visconti family, Francis Sforza and his descendants might assume the name of Visconti. For these facts see *Moreri Dictionaire Historique*, edit. Amst. 1740, art. Sforce, which appears, from the authorities there cited at the end, to have been compiled from Paulus Jovius, *Vie de Sforce le grand*, Scipio Ammirato, *Histoire de Florence*, Simoneta Ripamonte, *Ughel Italia Sacra*, Zazzara della nobile Famil. Sfort. *Inhof Hist. General. Ital. & Hispan. &c.*

tizen \*. Cæsar was educated by his father himself, from the age of four years and an half, so that he was able to repeat the whole grammatical work of Donatus † ;

\* Serviliano Latuada, in his *Descrizione di Milano*, 12mo. Milano, 1737, vol. ii. p. 38, in a chapter respecting the royal prisons and the captain of justice, speaks of the building appropriated to this person, as erected about 1605 ; and from his account the nature of the office may be sufficiently understood. Originally, and till the year 1493, the business was transacted in a part of the archiepiscopal palace ; but Lodovic the Moor in that year removed it for the purpose of affording a residence for the archbishop near the metropolitan church.—Ibid. p. 37. Describing the present structure, Latuada says, that it contains a magnificent staircase leading up to the apartments of the judges, and to the office of the actuaries, the criminal notaries, the clerks, and all the persons dependent on the chief justice, who is elected by the sovereign from the college of doctors in that city ; that he has a place in the senate, and accompanies the senators on public occasions, but his rank is last : he adds, that the chief justice is escorted by six halberdiers, which is the number of the guard of those of the highest rank, this officer having criminal jurisdiction throughout the whole state, and civil authority in causes relating to the duke or his servants. His duty being of such high importance, he has as a coadjutor, a doctor of the civil law, who wears a gown, is called the vicar, and is reckoned among the judges. In this building, he says, they exercise their functions together, and that it is also united to the Fiscal college for the purpose of their hearing and giving their vote upon the trials of offenders. It seems, from Cæsarianus's account, that his father was appointed to the situation of this doctor of the civil law, the coadjutor of the chief justice.

† Polenus, who, in his *Exercitationes Vitruvianæ*, p. 29, has, from this very note, given a life of Cæsarianus, says, that his father died when he was four years old, mistaking most evidently the passage in the text. Cæsarianus says his father instructed him from the time he was four years and an half old till he was able to repeat Donatus : though he does not mention his age when he so repeated Donatus, it is evident that a child so young could never have done it ;



but soon after this his father died, leaving him an orphan \*. Finding his end approaching in the village of Prospiani, his father was desirous of making his will, and communicated to Elizabeth his then wife what he intended for Cæsar's benefit; but she would not permit Joram de Magistris to be sent for: there being, therefore, no notary present, the father left his property for Cæsar on the promised fidelity of her, who, as Cæsar singularly expresses it, was afterwards called his stepmother.

Upon his father's death she married a notary; and when Cæsar had arrived to the age of about fifteen †, she, one day in a rage, because he wished to follow the ducal court with his preceptors, threatened that, if he did not for ever quit his father's house, she would certainly poison him. Upon this, Cæsar had recourse to Andrea de Vicomercato ‡, formerly chancellor

and, consequently, Cæsar must have been older when his father died. Polenus's work is full of mistakes in the account of Cæsarianus, and in one instance he did not understand the contractions used in Cæsarianus's book, as he says, fo. 91, b, that his father was appointed to the office of the chancery of the chief justice in Mino, instead of in Milano.

\* In the latter part of the note from which this account of him is taken, he says, that his father was buried in St. Stephen's church; but he no where mentions in what year he died.

† For the reasons stated in a subsequent note, it will appear that Cæsar must have been born about 1481 or 1482, and, consequently, he was fifteen in 1496 or 1497, or thereabouts.

‡ John Andrea Vicomercato, apostolical prothonotary and ordinary of that church, is buried in the chapel of St. Martin in the cathedral. He died in 1548 at the age of seventy-eight, and was a benefactor to that edifice. *Torre Ritratto di Milano*, 4to. 1714, p. 393.

to the duke, a pupil of his father's, who assisted him with a small sum of money, in consequence of which Cæsar left Milan, and wandered from place to place for hundreds of miles, and into various cities and countries, conversing with those whom he met with, and pursuing his studies. This he was enabled to do by means of his daily gains, which arose from the practice of painting and architecture\*.

After this, the ducal courtier Joannes Symon Resta, finding Cæsar one day in the church of St. Benedict †, took him with him to Ferrara, and there Cæsar employed himself in the comedies for Hercules the duke ‡. It happened, however, that Antonio Visconti, ambassador from duke Lodovic §, who was also of the ducal family,

\* Polenus, p. 160, in a Life of Vitruvius, speaks of Cæsar Cæsarianus in the following words—Cæsar Cæsarianus Mediolanensis, e pictore architectus, & Bramantis nostri, ut ipsemet affirmat, discipulus: so that he considered him as having originally applied himself to painting, and afterwards turned his attention to architecture.

† The parish-church of St. Benedict, which is said to have been originally founded in 735, by St. Benedict, archbishop of Milan, was afterwards assigned to the neighbouring foundation of Santa Maria del Soccorso, an endowment apparently similar to the Magdalen institution in this country, which had been commenced in 1567, by Charles Borromeo, but left unfinished at his death, and completed by Isabella of Arragon.—*Latuada Descrizione di Milano*, 12mo. Milan, 1737, vol. v. p. 414. From the plan which occurs at the beginning of the first volume, and succeeds the *Trattato* previo there, it appears that Santa Maria del Soccorso, which is styled a conservatory, is but a very small distance from the cathedral.

‡ Hercules became duke of Ferrara on the death of Borso d'Est, in August 1471, and died in 1505. *Moreri Dict. art. Est.*

§ This must have been Lodovic Maria Sforza, called the Moor, who in 1491 had married Beatrix d'Est, daughter of Hercules marquis of Ferrara. *Moreri, art. Sforce.* In an article for this duke, under

was at that time resident there. This person was much addicted to philosophical and mathematical studies; and several of the professors of that university having recommended Cæsar to him, he retained him for some time for the purpose of demonstrating the schemes and diagrams of some abstruse lectures which Cæsar effected from the writings of the Greek and Latin authors. After wandering about for nearly sixteen years, Cæsar at length, at the desire of his stepmother, and the request of others, returned home, with the view of delivering her from the ill treatment she experienced from her own sons \*. Having been taken as architect into the service of duke Maximilian, and dismissed by the populace, he returned once more to the siege

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the art. Louis, tit. Dukes of Milan, Moreri says, that Charles VIII. of France, being at Placenza in 1494, heard the news of the death of John Galeazzo, whom Lodovic had poisoned. On his death, Lodovic took possession of the dukedom without any regard to the son of his nephew, the preceding duke, who was then but five years old. Soon after, Louis XII. king of France, seized Milan, of which Lodovic recovered possession, but was taken prisoner in the disguise of a common soldier, near Novara, by the French general, who carried him to Lyons in the year 1500. He was confined in the castle of Loches, and died ten years after. Moreri's Dict. Hist. on the authority of Philip de Comines, l. 7. Guicciard. l. 1, 2, 4. Cerio, &c.

\* Polenus, p. 29, observes, on the authority of Guicciardini, that Maximilian was saluted duke of Milan in the latter end of December 1512, and that the victory of Novara was obtained by the Switzers (Helvetii), who favoured Maximilian, in June 1513. The citadel of Jove, he remarks, was the citadel of Milan, so called as being near the gate called Porta Zobia, or Giobia. From these facts Polenus says it appears that what Cæsar speaks of as having passed subsequent to his return, must relate to the year 1513; and consequently, as Cæsar left his home first at the age of fifteen, and was sixteen years absent, he must have been born about 1481 or 1482.

of the citadel of Jove, in consequence of the victory at Novara ; but having intrusted to the care of his step-mother some articles of his property, she returned to him scarcely any thing more than his translation of Vitruvius\*. For these his misfortunes he endeavours to console himself by the examples of Aristippus the Socratic philosopher, and of Julius Cæsar, who, as he says, in the Alexandrian war, to avoid the Egyptian vessels by which he was annoyed, leaped from his ship into the sea, carrying in his hand his Commentaries. After this he introduces a cut of the elective world, as he calls it, as he wishes that, and his own situation in it to be, and in which he gives a portrait of himself, but in so rude a manner, and so small, that it conveys no definite idea of his person, conducted by Patience, Prudence, and Boldness, to that station to which he conceives himself entitled. He complains of being deserted by all his father's relations; but says that Aloisius Pirovanus, a patri-

\* It is hence evident, says Polenus, that he prepared this work when he was absent from his own country, and brought at least part of it home with him ; but the fact may be closer traced—If Cæsar was born in 1481 or 1482, as mentioned in a former note, his first departure at the age of fifteen must have been in 1496 or 1497, and his return at the end of sixteen years more in 1512 or 1513. In his book, which was printed in 1521, he says he had been twenty years employed on it, which, at latest, carries it back to 1502, and had been obliged to publish it in the sixth year, when he ought to have revised it in the ninth. From this last passage it should appear, that, of that twenty years, six had been spent in revising and preparing it for the press ; and, if so, the principal part must have been written before 1515, though, from the state in which he left it when he quitted Como in 1521, he does not seem to have even then written the latter part, unless indeed he carried away the remainder or his manuscript with him.



cian of one of the noblest families of Milan, and most skilful in arithmetic and geometry, had been induced to patronize him with a fatherly affection.

Further on, he says that this work might perhaps be the means of ingratiating himself with his stepmother; and adds, that he had been about twenty years engaged in preparing it\*, and through the misfortune of Aloisius Pirovanus was compelled to publish it, not being able, without constant and intense diligence, to send it forth in the sixth, when he ought to have revised it in the ninth year†.

After this, he rhapsodically and absurdly requests the genius of Milan, the royal majesty‡, all future princes, the rulers, senators, and all other learned persons and heroic patricians, the clergy and nobility, the ædile D. Pietro de Novate, together with all other counsellors of

\* The book was printed and finished in July 1521, and this part certainly before May in that year, as appears from an advertisement at the foot of the Errata at the end of the book; in which it is said, that before he quitted Como Cæsar had finished and delivered to the printer so much of the manuscript as preceded fo. 154, whereas this occurs in fo. 91. From these circumstances, and the assertion in the text, Cæsarianus must have commenced his undertaking about the year 1501.

† Cæsarianus is so inaccurate and obscure an author, that it is frequently difficult to know what he means. He has before spoken of Aloisius Pirovanus as having patronized him with a fatherly affection, and here, in the very same note, he seems to think that his connexion with him was a misfortune. This inconsistency is not to be reconciled; but it is possible, from this passage, that he thought himself too much pressed by Pirovanus, and compelled to send his book abroad into the world prematurely.

‡ Francis the First, king of France, duke of Milan, when the book was printing.

the republic, the society of architects, and all princes, governors, ædiles, and architects, throughout the whole world, the learned and well-informed, and all the readers of his book, to pardon small faults, and to take the work under their protection, to get it revised and reprinted more correctly, either in the Latin or the common idiom, as they should think best, and always to renew the cuts, as they were all regulated by symmetry and good proportion, entitling it with his name and surname, in memory of him their patrician Cæsar Cæsarianus, as the whole had been accomplished by him with very small assistance from any other person.

A little further on, still speaking of his translation, Cæsar, fol. 91, b, says, let it not only now, but 1538 years after the publication of his Vitruvius \*, be related by some person in the world, that he had been able to expound the obscure senses, and affected and mysterious sayings, which through the great ignorance of them which prevailed, had appeared like enigmas; and that he had also amended and explained the Greek and Latin words in each of the ten books of Vitruvius, with cuts

\* Polenus, p. 168, in a note on the Life of Vitruvius compiled by him, says, that from some circumstances which he mentions, there is reason to think Vitruvius wrote after the 27th year before Christ, which agrees so nearly with this date of Cæsarianus as to require to be noticed. If Vitruvius had written in the 27th year instead of after it, 1538 years would bring the computation down to 1511; for 27 and 1511 make exactly 1538; but Polenus says he wrote after the 27th year, and the latest event mentioned in this note, namely the victory at Novara, happened in 1513. Computing backwards, from 1513, 1538 years would extend to the 25th year before our Saviour, which is but two years later than the year mentioned by Polenus as that after which Vitruvius wrote.

and notes which show the sense of the text, so that architecture might be well understood. "Therefore," says he (to give an exact translation of his own words), "if God and Nature do nothing in vain, I certainly think the Divine will had directed I should be born, and made me so learned in philology and architecture, in order that I might become the expounder of this divine work, and leave it in the world for its great utility, and especially as many very learned men have laboured to explain it, but have not been able to do so for want of understanding the terms. And as I was contented to perform the Divine will, it has enabled me to support the greatest misfortunes and miseries, as I have related; which unspeakable misfortunes thus suffered I forbear to state fully, in order that the reader may not be perhaps induced to shed some tears at my miseries, since I am, as it were, all my life through my stepmother and her sons rendered not only a kind of exile from my own country, but am disinherited of my father's property, and my own paternal house." This last circumstance he explains no further; but mentions that Antonia Brinscha, and her nurse Magdalen de Cuticis, his stepmother's mother, had procured him to be of the sacred and elect clergy of Milan, hoping to obtain for him other property to a greater amount than his father's.

These passages, in many instances, strongly indicate a degree of eccentricity, in some respects nearly approaching to insanity; but it is evident that this was only partial, as his character as an architect and geometrician has never been questioned, and the rules he has laid down have, as will be noticed hereafter, been uniformly found correct and authentic.

Notwithstanding the heavy complaints which Cæsarianus utters respecting his stepmother's cruelty, there is great reason to think her ill treatment of him might not have been without provocation on his part, if it is not, after all, very much exaggerated. Her objection, in the first instance, to his following the ducal court, seems to have had more of judgment and discretion than his resolution. It certainly implies a degree of concern for his interest, which is totally inconsistent with any idea of her driving him from home; besides that his leaving home was what she had already opposed. The increase of his property to an amount beyond his father's, which he himself has assigned as the motive of her mother and Antonia Briuscha in procuring him to be of the clergy of Milan, most certainly shows a regard for his welfare, even had it appeared, which it does not, that they were mistaken in their opinions on the subject. Nor is Cæsar's conduct, according to his own relation, by any means free from a great degree of inconsistency, when, after having all along represented his stepmother as an implacable and inveterate enemy, down to the very time when he was writing that account, and after having, as he says, experienced her as such for sixteen years or more, he, without any intimation of a reconciliation on his return, confesses he intrusted to her care a part of his property.

Throughout the book, and his own conduct, as described by himself, enough of Cæsarianus's temper is disclosed to convince any unbiassed person that a residence with him must have been almost insupportable. In his writings he plainly discovers an unbounded conceit of his own abilities and attainments, and seems to



consider himself as almost the first of the human species in point of intellect. His resolution to follow the ducal court in opposition to his stepmother's remonstrances to the contrary, is a decided proof of his obstinacy; and he seems, from his subsequent conduct, to have been one of those headstrong characters which sometimes occur, on whom kindnesses are ill bestowed, and whose perverseness and misconduct render them incapable of profiting from that assistance which is actually afforded them. Like most persons of this description, he appears to have suffered severely from his own pertinacity of opinion; for he frequently mentions his poverty, which, as he speaks of maintaining himself by the practice of painting and architecture, and never complains of the want of employment, a common degree of prudence and discretion would probably have prevented.

As an architect and geometrician, the character of Cæsarianus has always stood high \*; but as an author and man of literature, he is entitled to no estimation †. His style is a mixture of Latin, frequently barbarous,

\* Vasari, in his *Life of Bramante*, says, Cæsarianus was reputed an able geometrician and a skilful architect. *Vasari Vite de Pittori, Scultori e Architetti, per Della Valle*, 8vo. Sienna, 1792, vol. v. p. 139. Polenus says that the writers of Milan compliment Cæsarianus highly; that Paulo Moriggia calls him a great architect; and Filippo Picinelli says, that he explained Vitruvius with such copious and learned notes, that it is difficult to decide whether more is due to him who wrote the text, or to him who has illustrated and augmented it with his own valuable opinions.—*Poleni Exercitationes Vitruvianæ*, p. 31.

† The Glossary to the edition of Vitruvius, fol. Amst. 1649, calls his style, not without reason, semibarbarous.

with corrupt Italian introduced in scraps, so that some words shall be Latin, and the next a mixture of Italian ; or one part of a sentence is often Italian, compounded, however, of words from the Latin and Greek, but with Italian terminations, and the rest of it Latin, such as it is \*. His object in most cases appears to have been the introduction of as many words as possible, probably thinking, as bad writers frequently do, that verbosity tends to perspicuity, which in fact it utterly destroys. For instance, fo. 15, a, he styles an octagon tower, Octagon hecubata tholata pyramidata, because it is formed

\* As a specimen of his style the following passage is selected, which occurs fo. 91, a, in a long note. “ Unde io non per vindicta nè ira vel altrui culpe stiano æterne : Imo Io benedico la bontà divina che così sia stato : & breviter qualmente questa molti anni me habia vexato : il fatale caso monstraro : acio che altrui men'orandosi da le mie vexatione et erumne possano placidamente prendendo exemplo del caso mio epsi contentarse de quillo che dispone Dio : & la naturale : sorte. Ma dovendo Io sì como Vitruvio a li soi parenti agere le maxime & infinite gratie. Io prima diro cio che contingetiam ad me : Essendo per divina gratia & mediante epsi parenti : pervenuto a essere id quod sum Cæsare Cæsariano, illuminatore de queste scientiæ Vitruvianæ per causa dil patre mio : Laurentio Peritissimo de bone scientie di humanitate : & de le normale lege : & annotatione civile : per la cui solertia pervene a li Cancellarii negotii de li Illustrissimi : Bona Maria. & Johanne. Galeazio Maria Sfortia Vicecomite Duca de Milano : Al quale mio patre Citadino Mediolanense per benemerentia gli donarno con consensa dil maximo consiliario Ciccho Symoneta lo officio de la Cancellaria dil Capitaneato de Justitia in Milano : Epso patre havendomi erudito di ætate de anni circa quatro : & medio : per modo che jubilo gli recitasse sufficientemente lo grammaticale opusculo di Donato : Poi in breve al tuto mi lasso orphano : Questo cognoscendo la sua fine in villa. Prospiani : havendo voluto testare etiam instando Elisabetha quillo che volea per mio beneficio : Joram de Magistris non volse essere rogato,” &c,

on a cube, has a cupola or dome, and supports a pyramid. If he had simply described it as an octagon, it would have been sufficient, because nothing depended on the other particulars. His sentences are extremely long, complex, and involved, and frequently disjointed; so that two passages which relate to each other are not seldom at a distance, with others which have no reference interposed. They are connected in a manner totally repugnant to all ideas of style and composition, and evidently show that when he repeated, as he says he did, Donatus's grammatical work to his father, it must have been without understanding it, or knowing how the rules were to be applied.

Besides all this, the book is one of the most incorrectly printed that can perhaps any where be found: two words perpetually occur printed as one, and one as often divided into two. The punctuation is also abundantly faulty: no points are used but the colon and the period; a point very often is placed where there should have been none, by which means nonsense is produced; and others are omitted where the sense necessarily required their introduction.

Nor have the cuts in many cases, which undoubtedly were all copied from his own drawings, stronger marks of accuracy. In one instance particularly, namely, the sectional view of the nave of the church of Milan, with the external representation of the transept, he has inserted a multitude of letters, to none of which he refers in the explanation; but, on the contrary, says, the cut may be understood from what had been given before.

From these circumstances and the specimen of his



style already inserted in a note, the reader must necessarily perceive how great must have been, in the present case, the labour and difficulty of discovering the meaning and correcting the errors of so confused and inaccurate an author, though, after all, his principles are certainly right, and have proved so on experiment.

His conduct to Aloisius Pirovanus, whom he himself mentions as one of his best friends and patrons, appears to have been an example of injustice and ingratitude perfectly unprovoked; for at the foot of the errata, quite at the end of the book, is an advertisement from Augustino Gallo and Aloisius Pirovanus, in which they state, that about the end of May in that present year, 1521, Cæsar Cæsarianus, having written the Commentary as far as the place before mentioned (namely, the end of the sixth chapter of the eighth book), and delivered the copy to the printers, had, notwithstanding his engagement to the contrary, quitted Como, where it was then printing, and left the work imperfect, to their great loss, as they had hired the printers, who demanded to be paid. For the completion of the work, Benedicto Jovio and Bono Mauro were employed, and some of their variations are there stated.

At the end of book viii. chap. 6, fo. 154, b, in a note, it is said, that Augustino Gallo of Como, and Aloisius Pirovanus, patrician of Milan, the principal authors of that impression of Vitruvius which Cæsar Cæsarianus was long since to have prepared for them with the assistance of others, and which had been printed as far as to that place, though deprived of his assistance, had determined to complete it, and had employed Benedicto Jovio of Como, and Bono Mauro of Bergamo,



to prepare the remainder for the press. And again, in an address which follows the titles of the chapters at the beginning of the work, and is entitled, *Oratio Patritiis Populoque Mediolanensi*, Aloisius Pirovanus says, that not without great expense he had had drawings made by many excellent masters, which he had also procured to be engraven by no common artists, and that Augustino Gallo, Referendary of Como, and himself, Aloisius, of the noble family and ancient race of Pirovano, a citizen born of Milan, and a professor of arithmetic and geometry, by no means of low rank or unknown in that city, had hired men possessed of that kind of science, who had faithfully corrected, translated, and explained the work; and that among these was Bono Mauro of Bergamo, who had completed the translation of the text, cleared up several difficult passages, and restored to their true order others that were confused, before the work was delivered to the printers. He adds, that this person had been unjustly deprived of his due praise, having been styled only the corrector of those errors which frequent impression had introduced; and that, besides what was already noticed, he had drawn up and reduced into alphabetical order the table of words at the beginning of the book, which seems intended as a kind of glossary.

No apology for Cæsar's conduct, or circumstance to account for it, any where occurs; but as, in the passage where he speaks of his poverty as an hinderance to the correction of his work, he says, that that and the misfortune of Pirovanus had compelled him to publish his book in the sixth, when he ought to have revised it in

the ninth year ; it is probable he thought himself hurried to publish it prematurely, and took offence at that circumstance. Any reader, however, will immediately see that Cæsarianus's faults are radical and incorrigible, not arising from oversight but ignorance ; and no correction or revision by him was ever likely to have removed them, for he who could commit them in the first writing could not have had the sagacity to discover them in the revision.

To his account of himself, and the before-mentioned relation of his departure from Como, little is to be added. It appears however, from Cæsar's own Commentary on Vitruvius, fo. 70, b, that Bramante the architect was his preceptor ; for, speaking there of the vestry of St. Satyrus, he says, it was built by his master Donato di Urbino, surnamed Bramante ; and it is also known \* that he himself was for a time architect, or rather surveyor, to the cathedral of Milan, for the purpose of keeping it in repair ; which probably led him, and gave him the means, to measure and examine so minutely as he has done the proportions and principles on which it was constructed.

After his departure from Como in May 1521, nothing further is known of Cæsarianus's history, nor even at what time he died. All that Vasari † could learn was, that Cæsarianus, who wrote the Commentary on Vitruvius, when he had lost all hope of obtaining that reward of which he had formed expectations, became so

\* Torre *Ritratto di Milano*, 4to. Milano, 1714, p. 377.

† Vasari, in his *Life of Bramante*, among his *Lives of the Painters*, edit. 8vo. Sienna, 1792, vol. v. p. 140.

morose and savage, that he would from that time do nothing; and that, being rendered wholly ferocious, he died more like a brute beast than an human creature; which, considering the specimens of his temper and conduct, as they appear in his own narrative, is extremely probable.

## CHAPTER X.

*Gothic Architects worked by Rule—Part of the Church of Sienna recommended to be taken down, because, in that Instance, the Architect had not observed the due Proportions—This a Proof that there were settled and established Rules—Plan of the Church of Milan, how formed—Elevations of the Church, how produced—Cathedral of Milan, an Account of—General Proportions of Gothic Cathedrals—Mr. Knight's Opinion on the Mode of constructing the pointed Arch erroneous, and why—Sir Christopher Wren's Ideas as to Key-stones, contradictory to each other—The geometrical Construction of pointed Arches—Their Varieties of Proportion.*

IN opposition to reason and experience, it has been asserted by some persons, that the Gothic architects had no principles, and that they worked without rules either for forms or proportions \* ; as if order and regularity could ever be produced from disorder and confusion, symmetry and proportion be the offspring of chance,

\* Mr. Knight, in his *Analytical Inquiry into the Principles of Taste*, second edit. p. 162, says, speaking of Gothic architecture, " If we ask what they mean by pure Gothic, we receive no satisfactory answer ; there are no rules—no proportions—and consequently no definitions ; but we are referred to models of generally acknowledged excellence." Again, p. 175, he asserts, that the Gothic architects recognised no rules, but worked merely for effect.



and beauty and elegance the fortuitous consequence of caprice and negligence. A position like this certainly merits no serious refutation, nor are those who could once entertain it ever likely to be convinced by any arguments, however strong. But against positive fact and incontrovertible evidence no man can successfully contend; and both these, in the present case, are decidedly in contradiction to any such supposition as that above mentioned, as will now manifestly appear. In the year 1321, while the erection of the dome of Sienna was proceeding, Laurentius Magri Matani, and Nicola Nuti of Sienna, Cinus Francisci, Jone Johannis, and Vannes Cionis of Florence, were appointed to inspect the works carrying on; and by a Latin instrument, dated the 17th of February 1321, which Della Valle has printed at length in his *Lettere Senesi*, vol. ii. p. 60, from the archives of that cathedral, these persons declare it as their opinion, after stating several other objections, that the new work ought not to proceed any further, because, if completed as it had been begun, it would not have that measure in length, breadth, and height, which the rules for a church require. And they further add, that the old structure, to which, as it seems, the new adjoined, was so justly proportioned, and its members so well agreed with each other in breadth, length, and height, that if in any part an addition were made to it, under the pretence of reducing it to the right measure of a church, the whole would be destroyed.

This passage, it is true, does not speak precisely of the proportion of the members of which the style of architecture consisted; but is it possible to suppose that the

architects should in one instance have been such nice and careful observers of rule and proportion, and, when those guides had produced excellence, have neglected them in another? The contrary is the fact; and the proportions for these last will be shown, in a subsequent page, to be much nearer the Grecian style than is generally imagined. The only observation necessary on the above fact is extremely obvious. If there were no settled rules of proportion, there could have been no breach of them; and the architects could not have been censured on so absurd a charge as that of committing a crime of which in its nature it was absolutely impossible they could have ever been guilty. If the censure had not been just, it is very improbable that six impartial persons, as these appear to have been, should have unanimously concurred in a resolution to forfeit their integrity and ruin their own reputations for skill, in asserting a fact which the whole body of the professors would have known was untrue. Della Valle's suspicion, for which there is no ground whatever, that they wished to introduce the more modern and fashionable style of building, would have been no adequate motive for blaming the former erections as transgressing proportions, which, if those persons who espouse this opinion are right, never existed. None of these six persons seem to have been interested in promoting one style in preference to the other, or inclined to think better of the then modern state of knowledge than of the more ancient. If they had been, they would not have commended, as they do, the older part, but rather have advised taking down the whole of the former buildings, not

because those edifices were destitute of true proportion, but because they were not in the best or most beautiful style. They would have recommended a careful observation of the style they thus proposed throughout the remainder of the work; but this they have not done, as appears from their decision in writing.

In the before-mentioned translation of Vitruvius, and the Commentary with which it is accompanied, Cæsar Cæsarianus has contrived to introduce and explain the principles of Gothic architecture. A more methodical writer would have been at a loss how to have effected this in a work like that of Vitruvius, which has for its object the recommendation and ascertainment of the elements of Grecian. It is indeed the very last place in which any reasonable man would have expected to have found them, and it is therefore necessary here to state in what manner and order they occur. Vitruvius, in the second chapter of his first book, undertakes to describe of what particulars architecture consists, and amongst others mentions the ichnography, orthography, and scenography of a building, the signification of which terms he proceeds to explain; but his commentator Cæsar Cæsarianus, desirous of fully elucidating the question, is induced to attempt a further explanation in a note. The ichnography he defines to be the plan, the orthography the elevation, but of the scenography it is difficult to collect what was his idea; though it is now generally understood, that the orthography is a geometrical elevation of the front, and the scenography a perspective view of the front and side, by which means a general idea of the appearance of the whole edifice may be gained. In the course of his Com-

mentary on this second chapter, fo. 13, b, he says, that when a building is to be erected, a design or drawing of the intended edifice is to be made by measure, which is called a sketch ; and that afterwards a model should be constructed, by which the principal parts of the edifice are to be regulated. He then directs that the ground should be marked out with stakes placed from corner to corner ; that other stakes should be interposed between wall and wall, to show the separations across ; and that ropes should be stretched from stake to stake within and without, so as to give the thickness of the walls. After having thus stated the process, he adds, that the German architects pursued this method in the church of Milan, the symmetry of which is regulated by the length, which consists of 250 cubits from east to west ; from north to south the measures are 128 cubits within the walls. Of this church of Milan he has inserted, fo. 14, a, a wooden cut, containing a plan, a copy of which, reduced in size, and with a few corrections obtained from unquestionable authority, will be found in Plate VIII. of this work. He has also accompanied it with letters and other marks of reference to the different parts, which it has here been found necessary to change, by substituting other letters for them, because, for want of such types as he has used, they could not be expressed in printing. Great care has however been employed in the present work, to place the new characters precisely in the same spots with his ; so that, merely changing the letters, his explanation equally applies to both. With the above-noticed variation, then, the explanation he gives is to the following effect : The letters A B C ; B C D ; E F G ;



and F G H; are four equilateral triangles \*. I J K are the boundaries of the east end. J K L form an equilateral triangle, which touches the line that passes through the two eastern middle columns. These last, by their correspondence with the other columns, not only divide the body of the church from the aisles, but settle the foundation for the square tower in the middle, and show how it is constructed, the centre of which tower is the letter M. In like manner the letters I N O form the other equidistant line which passes through the two western middle columns, the measure of which line from the south to the north door is 128 cubits †. The letters P Q R are an equilateral triangle of the measure of 64 cubits; as are also, and of the like quantity, the letters S T M. The letters U V W are an

\* It is observable, that this plan consists of little more than two triangles in length, the second of which ascertains by its extent the spot for the first column from the west end; and of one triangle in breadth. These, on examination with the compasses, will be found to be as nearly as possible the proportions of the plans of the church of the Nativity at Bethlehem, and that of the Holy Sepulchre at Jerusalem. See those plans in Plates IV. and V. of the present work. The experiment has also been made with some of the Gothic churches in this country, and found to succeed in like manner.

† Cæsarianus computes by the cubit of Milan. Bibiena, in his *Architettura*, fol. Parma, 1711, p. 25, says of the Paris foot, that it is to be divided into 1000 parts, and that the cubit of Milan is  $1953\frac{1}{2}$  of such thousandth parts, and the London foot  $938\frac{5}{8}$ . See p. 26. Omitting fractions then, 938, the amount of the London foot, multiplied by 2, gives 1876, which is 77 short of that of the Milanese cubit. This number 77 is one twelfth of 938, the amount of the London foot, with a small remainder of 14; and as one twelfth of the London foot is equivalent to an inch, the Milanese cubit may be computed as about 2 feet 1 inch, or 25 inches of our measure.

equilateral triangle, from the centre of one to that of another of the columns which form the range extending towards the west, the distance of which columns asunder is 32 cubits. Where the letters *X U V V* are found, are the different indications for the smaller intercolumniations, which are of the measure of 16 cubits from the centre of one to that of the other pillar; and the letters *Z A* show the intercolumniation of the columns between which they stand. They ascertain also the outside extreme width of the door of the vestibule in the front of the nave, and regulate the vaultings of the arches over that part in the centre of which is placed the letter *B*.

The plan which he has given fol. 14, a, he has entitled "*Ichnographia Fundamenti sacræ Ædis bari-cephalæ, Germanico more, à Trigono ac Pariquadra-to perstructa, uti etiam ea quæ nunc Milani videtur.*" In English thus: "The Plan of the Foundation of a sacred Building, with Columns at a Distance asunder, constructed after the German Manner, by means of a Triangle and Square, like that which is now to be seen at Milan." On several parts of the plan he has marked the measures, which were purposely omitted in Plate VIII. of this work, because it was thought that their insertion would too much encumber the form of the plan. Such of them as are in any way material are here given in the letter-press. The thickness of the wall between the towers from east to west is, on account of the weight and the necessity for an equipoise between the front part and that towards the east, 3 cubits and a quarter. The breadth of the

pedestals at the ends of the cross between the two towers, is 5 cubits ; their projection 3 and one seventh. The distance between the tower at each corner of the cross, and the line formed by the extreme wall of the building on each side of the side-aisles of the nave, is 12 cubits and a quarter, with a small fraction. Each side of the towers at the corners of the north and south cross is, on the outside, 8 cubits and one third. The thickness of the wall of the church on each side of the side-aisles of the nave, is 2 cubits and two sixths. The space between the pedestals of the columns in the nave, is 12 cubits with ten twelfths and half an inch \* ; the breadth of the pedestals, 4 cubits and a sixth part, and their projection 3 cubits and a third.

In a subsequent part of his Commentary on the second chapter of Vitruvius, and particularly on that part of the text where Vitruvius mentions the orthography of a building, Cæsarianus notices what kind of front a structure may have, and that it may consist of an hemisphere placed on an oblong square ; and then speaking of the pediment over the front of the church of Milan, he inserts, fo. 15, a, a wooden cut of the orthography or elevation of that church. After this he gives, on the back of this orthography, another wood-cut, containing the scenographic representation of the same edifice. In both instances he accompanies them with letters of reference, which, as in the case of the plan, it has for the same reason been necessary in the

\* Bibiena says, that the Milanese cubit has 13 inches or subdivisions.



present work to change ; and gives a brief letter-press explanation to the following effect.

The orthography, or elevation, as well as the scenographic representation which follows it, is, he says, formed from the plan which he had before given, and by the same principle of the triangle. A correct representation of this orthography will be found, Plate IX. in the present work. The triangle is here marked at the base with the letters A B C D E F, and the point of it is to be found at G ; a perpendicular from which is dropped to the base line, and there distinguished by the letter H. But in order, says he, to show the method by which the colossal figure at the top was regulated, and by those means to have the rule for the elevation of the largest triangle, I shall extend the before-mentioned triangle on one side from A to I, being a space of 16 cubits ; and from F to J on the other side. Drawing a line from I to J, I shall gain the length for raising two other lines, which form the equilateral triangle on the before-mentioned perpendicular G H at the point K, the extremity of the arch, called in the third acute, or pointed. This triangle, if placed upon the range of the capitals of the smaller columns, marked L and M, will touch at its extremity the letter K. In like manner, if I place over the former a triangle on perpendicular lines, raised from A and F, the base of which will be N O, and its point P on the perpendicular P H, which forms the largest triangle Q R P, I then shall have the base, N O, resting upon the arch of the nave ; which base, by touching the extreme line of the building, ascertains, with the letters S T, the place where the top of



the border is to be ; so do also the letters U V, a little distant from them, as to the border a little above. The letters X Y give the base of a triangle on the capitals, and upper vaulting ; which upper vaulting is compacted together with an iron chain \*. Every vaulting of the arches is constructed by the compasses placed on an acute triangle, the strength of which for supporting a weight is always greatest on its very top ; but if the weight be placed but a little on one side or the other of the centre, the arch is easily broken. The method of placing an octagon tower on a square raised from the solid, is shown in the cut by the letters U V W ; and within the spaces L Z and M A, is the range of the lowest windows.

In the same page where this orthography or elevation occurs, the translator has inserted a plan of the base and abacus of the capitals of the columns, a cut of the base and elevation of the columns, an elevation of the capital of the columns, an elevation of one of the canopies, and an external elevation of the octagon tower on the outside ; but as these are peculiar to the church of Milan, and tend nothing to explain the general principles on which the Gothic architects acted, it was thought useless to introduce them into the present work.

The scenographic representation, so far as regards what is useful in it, is here correctly copied in Plate X.

\* It appears from this, that the introduction by Sir Christopher Wren of an iron chain under the cupola of St. Paul's, to prevent it from stretching or bulging, was no new thought, and the use of it in the church of Milan is a decided proof of the sagacity and skill of the architect.

though reduced in size. It has in the original a Latin title, which has been already given, p. 157 of this work; and it was from seeing a separate impression of that cut, as before mentioned, that the means were afforded of discovering where it occurred, and of procuring the book itself. The cut, as inserted in the translation of Vitruvius, is encumbered with a multitude of letters of reference, of which no explanation occurs; nor indeed does the figure need any elucidation, because, from the principles applied to the preceding cut, it is sufficiently intelligible. Cæsarianus has also employed in this scenographic representation three circles, a square, and an hexagon \*; but as these furnish no other points than those which

\* The division of a circle by a triangle, a square, and an hexagon, seems to have been with geometricians and astronomers an usual method of measuring. Philander, in his Commentary on Vitruvius, says, in a note on book ix. chap. 4, speaking of the relative situation of the planets, that there are four kinds of aspects, the trigonal, tetragonal or square, the hexagonal, and the opposite of six signs; and that Jovianus Pontanus has related, that when one planet is distant from another by an interval of four signs of the zodiac, it is said to respect that other trigonally, and is noted by a triangle. If it is distant three signs, that is called a tetragonal aspect, and is described by a square. If its distance from the other is two signs, that is called an hexagonal aspect, and is usually denoted by a star; and the opposite situation of six signs, or diametrical aspect, is commonly characterized by the number 6. Further on, in the same note, Philander draws this conclusion from what he has said: Therefore, a trigon is produced by an interval of 120 degrees between two planets, a tetragon by one of 90, a hexagon by one of 60, and an opposite position by one of 180; for the whole circumference is divided into 360 parts. To render this still clearer, he has inserted a cut of a circle so divided. See Vitruvius, edit. 1649, p. 187, in a note.

the several triangles had already produced, they are omitted in Plate X. in this work, in order to avoid an additional folding of the print. All that is said by way of explanation of this cut in the original is, that by means of two perpendicular lines raised at the points of the base of the largest triangle, on which perpendiculars he had, by small cross lines, marked the extent of each ornament, the place of every part might be ascertained; but as nothing is to be learnt from this as to the principles on which the divisions were made, it was needless to introduce them. It may, however, be requisite to remark, which Cæsarianus has not observed, that this last view is partly internal and partly external. The former cut, Plate IX. had given a section of the church exactly as it would have appeared, if the front of the building had been taken down. But this, in Plate X. which includes the parts given in Plate IX. exhibits behind them in the distance the exterior of the transept on each side.

The scales to all the plates are composed of Milanese cubits; and each of such cubits, as has been mentioned in a former note, is equal to about 25 inches of English measure.

As the cathedral of Milan has proved of such very great importance on the present occasion, some few particulars relating to it may perhaps be here expected. The following, therefore, are given from Carlo Torre's *Ritratto di Milano*, 4to. second edition, Milan, 1714.

The cathedral, he says, p. 377, is in length, from the modern front to the wall of the choir, more than 260 cubits, and the whole building is in circumference

1200. The length of the choir amounts to 66 cubits, and its width to 28 \* ; and he speaks, p. 376, of three windows, which are, he says, 50 cubits high, and 26 wide †. In p. 379 he describes it more methodically, as will be noticed hereafter. In the mean time, it must be observed, that he says, p. 376, that the architecture of it is Gothic, or German (Tedesca), so called by Cesare Cesariani, in the Commentary which he wrote on Vitruvius, and that it was built in 1387 ‡. Although the name of the architect is unknown, he conjectures it, p. 377, to have been Casa Omodea, because there is a portrait of that architect in a marble bas-relief over the choir, with his name under it ; a circumstance which has never happened in the case of any other, though a multitude were from time to time employed on the building in its progress, such as Simone de Ursinigo, Bramante, Bramantino, Cesare Cesariano, Vincenzo Sevegno, Giuseppe Meda, Angelo Siciliani, Galeazzo Perugini, Pellegrin Pellegrini, Martin Basso, Gabrio Busca, Melchiotte Megliavacca, Domenico Lonati, Gio. Maria Olgiati, Giacomo Soldati, Fabio Mangoni, Carlo Buzzi, Girolamo Quadro, and others §.

The building, he says, p. 379, consists of five naves in its length, and two across ||, which, one with another, are 16 cubits. The middle nave is in width 32, and so are each two of the aisles, or naves, on its sides ;

\* Page 381.

† These apparently must be, from their size, the two at the ends of the crosses, and that at the west end.

‡ Page 377.

§ Page 377.

|| It should plainly be three.



the whole of which side-aisles together make 64 cubits. The height of the vaulting of the middle nave is 85 cubits, and the centre naves of the arms which form the cross or transept, are of the same height. The two side naves or aisles adjoining the middle nave are 60 cubits high, and the two contiguous to the extreme wall of the building, 50. The vaulting of the cupola is in height 130 cubits, which is supported on four columns larger than the others: upon these arches the cupola rests, and is divided into eight angles. This cupola is from the ground 202 cubits.

The columns or pillars, as some choose to call them, are 52 in number, and are 46 cubits high, including the capital and base: the latter is two cubits in height, and the former 10. These columns are in girt 13 cubits, and the circumference of the base is 18; but that of the four columns which support the cupola is 15 at the capital, and at the base 22.

As few persons will, it is supposed, be inclined to take the trouble, and still fewer have the opportunity, of examining by actual measurement of any building on what proportions and principles it is founded; it has been judged expedient here to anticipate the result of such an inquiry, by stating the following circumstances:

Browne Willis, in the Preface to the second volume of his *History of Abbies*, p. 8, has noticed that, in most of the stately abbies, the height was equal to the breadth of the body and side-aisles;

That the steeple and towers were frequently built equal in height to the length of the whole fabric, or

rather the cross-aisle from north to south, as is the case in Bristol, Chester, and St. Davids ;

That the cross-aisles often extended half the length of the whole fabric, as did the nave or western part, viz. from the great door at the west end to the lower great pillars that supported the steeple ;

And that the side-aisles were just half the breadth and height of the nave, insomuch that both added together exactly answered it.

In the conventual church of Ely, erected in 673, and repaired in 970 \*,

The total length is four times its width.

Its length from the west door to the choir, five eighths of its total length.

The length of the choir to the extreme wall of the building, three eighths of its total length.

The width of the whole building is two eighths, or one fourth of its total length.

The height of its columns, capital, base, and plinth included, is four diameters and an half.

The height of the top of the arches from the ground, seven diameters of the column.

In the nave are nine arches.

In the choir five, exclusive of its semicircular end.

In the cathedral church of Ely,

The length of the nave, which is 200 feet, is 24 times the width of each arch, or 24 times the width of each pier ; for they are the same.

The breadth of the nave from wall to wall, one third of the length of the nave.

\* See the plan of it in Bentham's Ely, p. 29.

The breadth of the centre walk of the nave is equal to three piers and two arches.

The breadth of the transept from north to south, three arches each way added to the total breadth of the nave from wall to wall.

The height of the wall of the nave one third of its length.

The height of each arch and column together, internally, is equal to the breadth of the arch and pier together.

The height of the two lower stories is the diagonal of the arch and column of the bottom story, from the bottom of the plinth to the top of the uppermost arch, when placed perpendicularly.

The height of the upper story is the same diagonal, taken diagonally.

The height of the elevation of the roof is equal to two arches and one pier of the nave, which, as they are of the same size, is equal to three in number.

The width of the piers is one twenty-fourth of the length of the nave.

The width of the arches the same.

The piers, divided into three, form the pillars on each side of the nave up to the roof; and these again subdivided into three, form the other smaller columns.

The outer windows below have three divisions; so have also those in the second story: and all these divisions are equal to each other. In the upper story the divisions of the windows are likewise three in number; but the centre division is twice as wide as the others.

The building has three stories.

The arches and piers of the nave are twelve each, i.e. three times four.

Taking the whole mass of the pier together at bottom, if it had been continued up of that size to the bottom of the roof, or, in other words, had been the total height of the wall, its proportion would have been seven diameters and an half; but it is divided into thirds in breadth \*.

A most extraordinary position has of late been advanced by Mr. Knight, the author of *An analytical Inquiry into the Principles of Taste*, which requires to be particularly noticed, and is here given in his own words: "The pointed arch, which we call Gothic, is the primitive arch, of which the earliest instance known in Europe is the emissarius of the lake of Albano, built during the siege of Veii, long before the Greeks or Romans knew how to turn any other kind of arch; for as this may be constructed without a centre, by advancing the stones in gradual projections over each other, and then cutting off the projecting angles, its invention was obvious, and naturally preceded those constructed upon mechanical principles, of which I believe there are no examples anterior to the Macedonian

\* In conformity to the method adopted by Browne Willis, in the particulars before given from him, it was found necessary to describe the conventual church of Ely and the cathedral in the manner pursued in the text. It is, however, much more probable, especially in this last, that a system like that of Cæsarianus's settled the rule for its proportions. The cathedral of Salisbury and Westminster abbey are certainly founded on a similar system to his, to which, on experiment, they have been found exactly to answer.



conquest †." Had this author, before he had ventured to assert that a Gothic arch could be "constructed without a centre by advancing the stones in gradual projections over each other, and then cutting off the projecting angles," consulted any common mason, he would have learnt that an arch so constructed could never have stood; that, instead of supporting a weight, it would itself have needed assistance; and that it must necessarily have been the weakest at its point, where the pressure would have been the greatest. If a Gothic arch could be thus formed, there is no reason why a semicircular one also might not be so constructed; but the position contradicts every principle of geometry, and all ideas of the laws of gravity. A carpenter may, indeed, glue together a number of boards edge to edge, and then, after striking the curve on them, may, with a saw, cut them into the form of a Gothic, or any other kind of arch; and from the possibility of such a process, in the case of a carpenter, the idea seems to have been borrowed, and transferred to the operations of a mason, with which it has no connexion. But a mason works by geometrical rules; and it is not too much to assert, that no arch formed in the manner above described can be produced, for that no such ever existed. The reason is plain: the pressure in the case supposed would not be, as it is, by means of the wedges, of which every arch is formed, thrown on the pillars, but would act equally on those stones which were beyond the perpendicular of the columns, and which,

† Analytical Inquiry into the Principles of Taste, second edition, p. 165.

having nothing to support them but the strength of the mortar by which they were cemented to the rest, must inevitably give way, and themselves fall to the ground. A reference to the principles of geometry and reason is not, however, necessary for the purpose of refuting the before-mentioned assertion. Every one who has ever examined the construction of a Gothic arch as exhibited in any building, has found, and knows very well, that it is not produced in the manner above described. Gothic arches are formed like all others, on perfectly correct geometrical principles, and consist of a key-stone and a succession of wedges; though it is not certain, at the same time that there is no reason to doubt it, whether the slopes of the joints all tend to the same centre in the base line, from which the arch springs. For the ascertainment of this last fact no opportunity has as yet occurred; yet it is evident, on inspection, that the outer line of the arch, rising as it does from the same level as the inner, is longer than the inside line, and, consequently, that none but pieces in the form of a wedge can produce it. The arches in Westminster abbey are decided proofs that the joints are not horizontal, but tending towards a centre in the base line, and, consequently, that the arches are formed on geometrical principles. Sir Christopher Wren, in his Letter to the Bishop of Rochester \* respecting the Repairs of Westminster Abbey, has, indeed, asserted that the arches of the Saracens, from whom, as he supposed, Gothic architecture came, were pointed without key-stones.

\* Wren's Parentalia, p. 297.

Yet, in the very same Letter, speaking of the west walk of the cloyster of Westminster abbey, he says, he finds, in the vaulting and the key-stones, the rose of Lancaster \* ; and in one of his opinions, as stated in the Parentalia, p. 298, he describes the sharp-headed arch as rising with little centring, and requiring lighter key-stones and less butment than the Grecian. Both these last passages, which are founded on actual facts, are flat contradictions to his assertion above, and are certainly preferable to it as well in weight as in number.

It is to be remarked, that the joints of the Gothic arch do not always occur in the same places, but were regulated by the size of which each piece of stone happened to be, and that sometimes there is a joint, and sometimes none, exactly at the point; there is not, therefore, in them that decided centre or key stone which is seen in Grecian architecture, and which in that is often ornamented with carving. But in the Gothic arch, as well as the Grecian, the pieces of which it consists are all wedges, and, consequently, the last stone, wherever it occurs, acts as a key-stone to the whole. Where it happens, however, as it often does, that several pointed arches are brought together, and conducted to the same point or centre, for the purpose of forming a vaulting there, a regular key-stone actually occurs in the centre, which is frequently decorated with carving of foliage, heads of animals, or other subjects in great variety.

\* Wren's Parentalia, p. 298.

Of the pointed arch, one distinguishing characteristic of the second style of the architecture of the middle ages, there seems to have been a great variety of proportions, as it is found to have been struck on different occasions, from one third of its width \*, from one fourth †, one fifth ‡, two fifths §, one sixth ||, one seventh ¶, two sevenths \*\*, three sevenths ††, one eighth ‡‡, one ninth §§, two ninths |||, and five twelfths ¶¶; but that constructed on an equilateral triangle is the most usual. These instances and varieties might have been much multiplied, had the arches for forming entrances, or those where any circumstances had confined the architect to a limited height and width for his arch, been considered. But these, as being dictated by peculiar necessities, were not thought necessary to be here noticed.

\* Carter's *Ancient Architecture of England*, Pl. 54, Fig. N, Lumley castle, Durham, built in the time of Edw. I. Ibid. 57, J, St. Dunstan's, Canterbury.

† Ibid. Pl. 57, T, church of Dunchurch, Pl. 38, Fig. 2.

‡ Ibid. Pl. 44, E, St. Mary, Coventry;—54, D, from Christchurch priory, Aldgate.

§ Ibid. Pl. 57, A, door-way in Salisbury cathedral.

¶ Ibid. Pl. 57, I 3, window of hall in Chepstow castle, general arch.

¶¶ Ibid. 56, A, 2, door-way, Allington church, near Maidstone.

\*\* Ibid. Pl. 57, Fig. Q, door-way from Salisbury cathedral; 56, N, St. Dunstan's, Canterbury; 56, T, door-way near Painted Chamber.

†† Ibid. Pl. 44, L, Daventry priory, Northamptonshire, erected in the reign of W. Rufus.

‡‡ Ibid. Pl. 36, U, Ramsey church, Huntingdonshire.

§§ Ibid. Pl. 56, E, 2, from Tintern abbey.

||| Ibid. Pl. 57, Y, door-way, St. Peters, St. Albans.

¶¶ Ibid. Pl. 57, G, Durling church, near Maidstone.



## CHAPTER XI.

*Albert Durer's Rules for forming the Varieties of the clustered Column, its Capital, Base, and Pedestal—Varieties of Proportion of Columns, Capitals, and Bases—Doors and Windows, their Proportions—Proportions of Gothic Architecture more nearly resembling those of the Grecian than generally supposed—Variations of Proportions of Columns no Reason for contending Gothic Architects disregarded Rule—Similar Variations occur in Grecian Architecture—Repairs and Restorations of Henry the Seventh's Chapel at Westminster, as now carrying on, highly deserving of Commendation.*

ALBERT Durer, in his *Geometry*\*, notices, at the beginning of the third book, that columns are usually constructed in a variety of modes, and that their proportions are to be regulated by the weight which they

\* This work appears to have been originally written in German, from which language it was afterwards translated into Latin. A second edition of the translation was published in folio at Arnheim, in 1606, with Albert Durer's cuts, as they were used in his own edition. These facts are mentioned in the title-page to the above impression of the translation, which is entitled *Alberti Dureri Institutio Geometricarum Libri quatuor*. The date of the original publication of the German does not appear, but one of the cuts bears the date 1525. Prefixed by way of preface to this translation is a Latin letter from Albert Durer to Bilibaldus Pirceymerus, but without any date.

are intended to support. He says, that some persons apply bases and capitals to their columns, and that others erect shafts only from the foundation. But he notices, that at top, on account of the form of the arches, they are divided into parts, or the shafts themselves may be continued up, so that some of the separate ornaments of the arches may be placed on them; as if, for instance, a fillet should be made to pass obliquely through an hollow, or some ornament should be carried through another to which it is opposite. When these things, adds he, are performed by a certain rule, they then render the work uncommon and very beautiful; which ingenious architects are accustomed to observe very diligently. In shafts such as these it is allowable to use different varieties in the fillets, flutings, fascias [or bands], angles, and hollows; but all these should be drawn on the plan of the proportional parts, and be afterwards transferred into the work.

He observes, that if four shafts of the same size are placed next each other\*, each of which has its proper embellishments on the plan, when these come to be divided into arches for the purpose of forming the vaulting, the construction will be wonderful and elegant. Those who are delighted with such things may, he says, use them at pleasure; and as many persons are very fond of unusual conjunctions of arches in forming vaultings on account of their beauty, he shall give, as he does underneath, an example in a cut, to which he shall also add the plans of some shafts of columns which may be used if any one chooses; and these he shall ac-

\* He must mean, not in a line, but so as to form a square cluster.

company with some projecting cymas [or undulating curves] which belong to the bases of columns.

The plan for the vaulting which he has mentioned above, and which is given in his book, it is unnecessary here to insert, because it is merely a design by himself, and nothing of principle is discoverable in it which could be applied to any other. The plans for the shafts of the columns, and also the elevations of the mouldings for the bases, will be found, as given by him, in Plate XI. of this work, and they are evidently such as frequently occur in Gothic erections. Of the former of these, the plans of the shafts, he declares that any one will readily perceive the principle of proportion on which they are founded; and he therefore inserts no explanation; because he says, if all things must be written down, the book would become too prolix. All he adds further is, that the plans which are drawn with single lines require, notwithstanding, the same thickness and breadth, as the curves when delineated will hereafter show, and that columns may be made with different angles, and with any ornaments whatever\*.

The author is certainly too brief in thus leaving the cut without illustration; and though it is not here intended to be very elaborate, it has yet been judged necessary to introduce, which he has not done, letters of reference, and to point out briefly what geometrical forms those letters thus placed produce.

In Plate XI. Fig. 1, therefore, A B C form a triangle, which gives the centres for the circles at the corners. A triangle placed on each side of that triangle will ascertain by its point the centres for striking the hollows on the sides.

\* Albert Durer, p. 77.

Fig. 2. A B C is one triangle, and D E F another.

Fig. 3. A B C is a triangle, the sides of which give the straight lines between the circles.

Fig. 4. A B C produce one triangle, and D E F another, the sides of which regulate the inner points for the circular mouldings.

Fig. 5. A B C and D E F are in this also triangles.

Pursuing the subject still further, Albert Durer, p. 79, says, that if he had intended to write on the whole science of architecture or its parts, no one could be ignorant how well Vitruvius has treated on the subject; for which reason he thinks that in works of the highest rank his directions are to be observed; but that, as he himself means, for the exercise of youth, to endeavour to construct one or two columns, he cannot help recollecting the Germans §, who, when they intend to erect any new edifice, are desirous of employing also a new style of building which has not been seen before. For this reason, he says he shall teach how to produce something uncommon, and from which every one may take what he pleases.

Speaking in the first place of the column, he says its shaft may be in height 7 diameters and an half; but the fascia || is to be one eighth part wider than the diameter of the column, and in thickness (or depth) one eighth part of a diameter; and at the top, the column is to be diminished to seven eighths of its diameter. The fascia

§ In the course of the present work it has been remarked that Gothic architecture has been sometimes termed German, though without any sufficient reason.

|| A square member which forms the upper part of the capital.



above mentioned, and the ring \*, should only project as far as the column at bottom extends, and the depth should be equal to the projection.

In the next place, he directs that the column being drawn and a round plan placed under it, should be ornamented; for which purpose he says a spiral line, of which he had spoken in the first book, may be used; and at first the curves should only be directed from one side to its opposite, or they may proceed from each side, and so intersect each other obliquely. In a column eight curves of this kind in the same direction may at least be made, the commencement of which is to be taken from the circumference of the plan underneath. This plan is to be divided into equal parts, from which divisions eight straight lines are to be carried up to the shaft of the column; but if the curves are drawn from the two opposite sides, then from the eight points of the plan sixteen curved lines will proceed. Such spiral lines may be drawn over the whole column, or may stop below at one third of the height.

These curves may, he adds, be varied in many ways, as different persons are able to invent, and may be placed close one upon another, or carried up to the top at certain distances. They may also be made closer at bottom and more distant towards the top, by means of a triangle, which, for the purpose of dividing a spiral line, he had inserted in his first book. Such decorations may be used in columns of whatever kind they may be, whether thicker in the middle than above and below, or every where equal, or with an addition below, and a di-

\* A quarter round moulding under the fascia.

minution at top ; only according to the thickness of the column the distances for the lines must be regulated.

The spiral line for dividing the column is to be thus used: first divide the circular plan of the column into as many parts as you please, to which add their numbers, beginning from the opposite point of the diameter. From these numbers bring up the curves upon the column, and draw them upon it at equal distances, in the following manner—Draw a straight line from each of the divisions of the plan underneath, up to the bottom of the shaft of the column, and mark these points with the same numbers as they had in the circular plan. Divide also the column above, where it is narrowest, into as many parts, which are also to be numbered in the same manner as was done below. Then with straight lines connect the upper points with the lower in the shaft itself, the length of which is next to be divided by fourteen cross lines into fifteen equal intervals, and begin to number from the base to the capital, 1, 2, 3, &c. and thus the whole shaft will be reticulated. Many very useful things may, he says, hence be effected; but this he has inserted, in order that the revolutions round the column may be more conveniently traced.

After this he says, begin below upon the fascia from the perpendicular line 1, and draw a spiral line upon the column obliquely as far as the angle of the perpendicular line No. 2, and of the cross line No. 1. Then from the opposite side draw upwards another spiral line obliquely from the point of the perpendicular line 2, to the angle of the cross line, and of the perpendicular line 1. In this manner proceed with each of the numbers of all the squares which are upon the column,

or draw the spiral lines from one side only to the opposite, so that they may not intersect each other; confine this to the lower third of the shaft, and extend the perpendicular lines upwards throughout the whole shaft; or employ these last no higher than a little above the lower third of the shaft. In short, you may use each of these separately, or some of them, or all together; and in like manner, whether lines are drawn across or not, we may yet from delineations of this kind produce many excellent things, which he will immediately see who shall make the experiment:

The capital to the column is to be constructed in six ways, which might be varied an hundred, if there were occasion: Make a square of equal width with the top of the shaft just under the ring (or collarino at the top of the column); let its height be half its width; upon that square place a plinth, which should contain a third part of the thickness (or depth) of the capital; and let this plinth be rectangular and equilateral. Its breadth should be such as that its sides may touch the projecting fascia at the top of the capital. What the projection of this capital should be, shall be presently mentioned. This plinth may be octagonal; but if it is square, its sides may be hollowed out by the compasses, in the following manner: Let the two central lines in it, which intersect each other at right angles in its centre A, and divide the plinth into four equal parts, be lengthened. Continue each line both ways as far as shall be necessary, and mark their terminations B C D E; then open the compasses to the extent of the side of the plinth, and place the foot in these four letters, and with the other strike a curve in the sides of the plinth, and every two

curves where they project from the sides of the plinth are to be cut off by a cross line beyond the angles of the plinth.

On the depth of the plinth many things may be carved, as fascias, lists, small hollows, and others of a like kind; but let him who wishes to vary the directions above given, always make the change from those in the following manner:—In the first sort, engrave or carve the plinth thus: divide its depth into two parts, and the upper half again into two parts, which is to be inverted in two ways. Of the upper part make a fascia, of the second a scotia (or undulating hollow) as deep as it is high. Then from the lower half make a fascia as deep as its own height; or, instead of a scotia, let there be a quarter of a torus: and if either of these be inverted, so that the under part becomes the upper, it will be a different system.

Another method is this:—The plinth is to be divided in the middle, and the upper half will give the quarter part of a torus, but the under a fascia; or place what is below above, and it will again have another appearance.

Another mode.—Of the upper half a quarter of a torus is to be made, and the under part is to be hollowed out as much as it is high.

Another method.—The depth is to be divided into three; the upper to remain a fascia, the two lower are to be hollowed out with the compasses equal to their depth. If this is inverted, it will again be another method; or the height may be divided into two. Of the lower a scotia may be made, which may recede as much as it is high. The upper part may be again divided into



two, and of the lower half a fascia may be made, but of the upper an hollow.

Another variation.—The depth is to be divided into six parts. Of the upper a fascia is to be made, of the two next a scotia as deep as it is high, of the lower two a hollow, which, if inverted, will be another variation. Again, under the fascia a cymatium or curve may be placed; or contrariwise; or above, a small scotia made, and between them and below a large scotia; but so that above and below the torus two fillets may remain. Variations of this kind are, he says, infinite; and he adds, that he has not given these directions because they must not be departed from, but only that something may be taken from them, and to show every one what that is new remains yet to be discovered; for it is not sufficient, in making such divisions, to follow any one mode of dimension, but different ones must be used, if a person knows any such.

He next says he shall describe the capital in its most simple state; and shall at first use a square, without any ornament. Afterwards it will be necessary to adorn it with some ornaments, especially when the work is large. Fascias, hollows, fillets, and all the other particulars may also be each embellished by placing on them something excellent, or carving them nearly in this manner:—Divide the height of the capital by five marks into six equal parts. Of the upper sixth make a plain fascia; extend it one sixth beyond the height of the capital, and then make a mark under the fascia, half the thickness of that fascia within the extremity. From this point draw a perpendicular line through threesixths; this will be a large plain fascia. But of the two lowest sixths

make an upper scotia as deep as it is high, by which means there will remain above the lower fascia some projection, and the capital will have a small diminution.

In the second instance act thus :—Leave the upper fascia in the same state as directed above; and, having divided the height of the capital into six parts, place a mark in the middle of the fourth sixth, from which mark draw a cross line through the capital; and that narrow space which will be left above the two lowest sixths will give a fillet, which is to project as much as its height. By this mode the two lowest sixths will continue like a plain necking; but what remains above may be rounded to an arc of a circle, and may incline towards the upper fascia, but so that the fascia may project half its size.

In the third, let the projection of the fascia be made as before, of which let only one half be given to its depth. Nothing more is to be done in this capital than that its remaining part should be hollowed out to an arc of a circle as far as the projection of the fascia above, so that it may produce an under scima.

In the three remaining capitals make, says he, fascias like the former, and having divided the height of the capitals, as was directed, into six, draw under the third sixth, through the capital, a cross line, between which and the fascia make a large scotia, which yet will by its concavity take away nothing from the size of the capital: from this will be discovered the projection for the acute angle in the cross line just mentioned. Afterwards draw through the middle of the fourth space a cross line, from which interval let a small scotia be made, so that its depth may touch the thickness of the

capital; then by the lower circumference of the cross line it will give the measure how far it ought to project. Then let the lower sixth be divided by two points into three equal parts, the lowest of which is to be separated from the rest by a cross line, and of that make a fillet projecting as much as it is high. Of the rest make a torus, of which both the declivities may touch the sides of the capital; but the rounding is not to project farther than the acute edge of the scotia which rests on it.

In the fifth the upper great scotia is to be made as directed at first, and the lower part of the capital is to be divided by two cross lines into three. Of the two upper make two scotias, and let the lower remain a fascia.

In the sixth let the capital from the fascia at top to the bottom be divided into three; let two be given to the hollows, and in like manner the lower be left for a hollow, but so that the depth of each hollow may take nothing away from the thickness of the capital. When these capitals are completed, they may be ornamented in a variety of methods, according to the judgment of every one, as I shall show in each.

Take the plinth above spoken of, and, in the first instance, an octagon one, and place it on the first capital, and under every angle make a square dentil, but in that part where it joins the capital make it thicker.

The projection of this is to be one fourth of the thickness of the capital, and the dentil is to have the same depth as the octagon plinth. When you wish also to decorate any capital, add to the thickness only as much as will be sufficient for making the ornaments.

In the second capital place the square plinth, and from

the fascia of the capital make on the two sides volutes, with other additional ornaments.

In the third capital let the square plinth be hollowed out ; to which, under the angles, are to be added as ornaments, square projections, which may be one fourth of the thickness of the capital, and thicker than the plinth by one quarter of the plinth. Then round ornaments are to be placed in the hollowed sides of the plinth, as thick as the plinth, and projecting so that they might touch the sides of the plinth if it were still square. Lastly, when the squares are prepared for the ornaments, something excellent may be carved upon them, such as branches, or some single leaves, or the heads of animals, or parts of birds, or other things whatsoever, according to the pleasure of those who carve them. But when the capitals are finished, they are to be placed on the shafts, and one will confer grace on the other.

The base of the column is to be completed thus : of whatever thickness the shaft of the column is at the bottom, the height of the base or spira is to be one half of that thickness ; and on each side from the fascia perpendicular lines are to be drawn to the end of the base, which base may be divided by two cross lines into three parts, of the lowest of which a square plinth may be made, which may have a projection equal to its thickness. The middle third is then to be divided into three, the upper of which may remain a plain fascia ; but of the other two a part of a torus may be made thus : place one foot of the compasses in the upper cross line of the plinth, and on the perpendicular line of the side, and the other foot at the corner of the fascia just



formed, and describe a sweep of the compasses from the side of the base on the outside, as far as to the upper cross line of the plinth. Afterwards let the upper third be divided into three, of which the lowest is to be given to a fascia, which may project beyond that on which it lies one half of its own height; let the other two be left for a torus, which may project beyond the fascia on which it is placed as much as one half arc of the round projects, if its beginning be taken at the corner of the above-mentioned fascia.

The whole column, with capital and base, is now to be placed on a pedestal, which is thus to be made: in the first place, let a square be prepared one fourth of the height of the whole column, including the capital and base, but as large as the bottom plinth of the base: this square pedestal is to be placed on the foundation, and afterwards from it above one fourteenth part is to be cut off by a cross line, which is to be carried out as much from the perpendicular of the side. That segment is again to be divided through the middle by a cross line, and the upper part may remain a fascia, but the lower may be made a quarter of a torus, which may adhere to the corner, and project one half of the projection of the fascia. This being done, cut off below from this pedestal a seventh part, which is to project as much beyond its sides, and above separate from it one fifth part, of which a fascia may be made, which may project as much as it is high, and its corner above may be rounded off with the compasses. What remains under this fascia is to be divided into two by a cross line, and of the lower segment a fascia may be made, the projection of which may be divided as far as to the perpendi-

cular of the side by perpendicular lines into three parts; and from the extremity of the upper fascia to the lower fascia, let the arc of a circle be drawn, which will make half a torus, but so that the projection of the lower fascia may exceed that of the torus one third. This pedestal may be ornamented in a variety of methods; but those which he has described above, he says, he has represented, together with their plans, in a cut underneath.

In order, he says, to understand what are the ornaments which can be executed with the carpenter's axe and the carving tools, it is to be observed, that there are six principal particulars of which these ornaments may consist: the first is the plain fascia; the second, the scotia, or trochilus; the third, the torus; the fourth, the projecting angle; the fifth, the concave angle; the sixth, the cymatium, bending as every one pleases. These particulars may either be used all together, or some only, and may be made convex or concave, plain or projecting, broad or narrow, acute or obtuse, large or small, in comparison with each other, wide or confined, or in any other way that one pleases. But every workman ought to use a just symmetry, and in large works should employ large ornaments, and in small works small ones. This, he says, he shall show below by means of two fascias, a long and a short one, placed side by side; for every man's understanding will easily perceive that which is long ought to be thicker than that which is short. For this reason, if an architect is desirous to make cymatias or cartouches, or any thing of a like kind, he ought to make the outer parts which project farther, larger than the inner, which are shorter.

If the contrary to this be done, it will be deformity, This last assertion he proceeds to demonstrate by references to some cuts which he has inserted, consisting in one instance of the column with the lines before described; and in another of the capitals, bases, and pedestals marked with the measures which in the letter-press he had already assigned to the different parts. But as these convey no new idea, and his verbal description was thought sufficiently intelligible, it was judged unnecessary to give further illustration.

Columns in Gothic architecture, as well as arches, occur in great variety of proportion, as will appear from the following examples :

Total Height reckoned by Diameters.	Height of Shaft without Capital and Base.	Capital.	Plinth and Base,
$3\frac{1}{6}$ .....	3 wanting 1 inch.	$\frac{2}{3}$ of 1 .....	$\frac{1}{2}$ a diam. <sup>a</sup>
$3\frac{1}{7}$ .....	2 .....	$\frac{4}{7}$ of 1 .....	$\frac{4}{7}$ of 1 <sup>b</sup>
$3\frac{2}{3}$ .....	$2\frac{1}{3}$ .....	$\frac{1}{3}$ .....	..... <sup>c</sup>
$3\frac{3}{4}$ .....	$2\frac{2}{3}$ .....	$\frac{3}{4}$ of 1 .....	$\frac{3}{4}$ of 1 <sup>d</sup>
$3\frac{4}{5}$ .....	2 .....	$\frac{1}{2}$ of 1 .....	$\frac{1}{2}$ of 1 <sup>e</sup>
$3\frac{1}{2}$ .....	$2\frac{1}{2}$ .....	$\frac{2}{3}$ of 1 .....	$\frac{2}{3}$ of 1 <sup>f</sup>
$3\frac{7}{8}$ .....	$2\frac{1}{4}$ .....	$\frac{7}{8}$ of 1 .....	$\frac{7}{8}$ of 1 <sup>g</sup>
$3\frac{5}{6}$ .....	3 .....	$\frac{1}{3}$ of 1 .....	$\frac{1}{3}$ of 1 <sup>h</sup>
3 .....	.....	a diam. ....	1 diam. <sup>i</sup>
3 .....	.....	of a diam. ....	$\frac{1}{2}$ a diam. <sup>k</sup>

<sup>a</sup> Carter's Ancient Architecture of England, Pl. 7.

<sup>b</sup> Ibid. Pl. 16, Fig. N.

<sup>c</sup> Ibid. Pl. 16, Fig. U, from Canterbury.

<sup>d</sup> Ibid. Pl. 21, Fig. O, from Rochester castle.

<sup>e</sup> Ibid. Pl. 22, Fig. H, from the Tower.

<sup>f</sup> Ibid. Pl. 23, Fig. A, from St. Bartholomew's, 1133.

<sup>g</sup> Ibid. Pl. 37, Fig. A, from Canterbury crypt, erected at the end of the eleventh century.

<sup>h</sup> Ibid. Pl. 67, Fig. A, from the priory church of Abergavenny,

<sup>i</sup> Ibid. Pl. 68, Fig. N, from St. Albans,

<sup>k</sup> Ibid. Pl. 67, Fig. A,

4 diam. reject- ing 1 inch. }	3.....	.....	{ $\frac{4}{7}$ of 1, rejecting 1 inch. <sup>1</sup>
$4\frac{3}{4}$ .....	.....	.....	..... <sup>m</sup>
$4\frac{1}{2}$ .....	.....	.....	..... <sup>n</sup>
5.....	$2\frac{2}{3}$ .....	$1\frac{2}{3}$ .....	$1\frac{1}{3}$ <sup>o</sup>
$5\frac{1}{4}$ .....	$4\frac{3}{4}$ .....	$\frac{9}{16}$ of 1.....	$\frac{7}{16}$ of 1 <sup>p</sup>
5.....	$4\frac{1}{6}$ .....	$\frac{1}{4}$ of 1.....	$\frac{7}{12}$ of 1 <sup>q</sup>
5.....	4.....	$\frac{1}{16}$ of 1.....	$\frac{1}{12}$ of 1 <sup>r</sup>
6.....	5.....	1.....	$\frac{1}{4}$ of 1 <sup>s</sup>
$6\frac{3}{4}$ .....	.....	$\frac{3}{11}$ of 1.....	$\frac{3}{11}$ of 1 <sup>t</sup>
$7\frac{2}{3}$ .....	$5\frac{3}{4}$ .....	$\frac{1}{16}$ of diam.....	$\frac{1}{16}$ of 1 <sup>u</sup>
$7\frac{1}{7}$ .....	$5\frac{1}{7}$ .....	$1\frac{1}{7}$ .....	$\frac{1}{7}$ of 1 <sup>x</sup>
7.....	$5\frac{1}{4}$ .....	$\frac{3}{4}$ of 1.....	1 <sup>y</sup>
$7\frac{2}{3}$ .....	.....	$\frac{1}{3}$ of 1.....	$\frac{1}{3}$ of 1 <sup>z</sup>
$8\frac{2}{3}$ of great cy- linder }	.....	$\frac{3}{7}$ of 1.....	1 diam. <sup>a</sup>
$8\frac{2}{3}$ of great cylinder }	.....	$\frac{1}{2}$ a diam. ....	1 diam. <sup>b</sup>
9.....	6.....	2.....	1 <sup>c</sup>

<sup>1</sup> Carter, Pl. 18, Fig. M, from Durham, erected about 1093.

<sup>m</sup> Ibid. Pl. 18.

<sup>n</sup> Ibid. Pl. 28, Fig. A, from Oxford, 1004.

<sup>o</sup> Grymbald's crypt, in Leland's Collectanea.

<sup>p</sup> Carter, Pl. 28, Fig. A, from Oxford cathedral, 1004.

<sup>q</sup> Westminster abbey, of the reign of Henry III. as represented and measured in Langley's Gothic Architecture, Pl. A.

<sup>r</sup> Ibid. of the time of Edward I. as represented and measured in Langley's Gothic Architecture, Pl. B.

<sup>s</sup> Carter, Pl. 27, Fig. K.

<sup>t</sup> Milan, erected 1387; thickest columns, from the measure given by Carlo Torre, Ritratto di Milano, 4to. Milan, 1714, p. 379.

<sup>u</sup> Carter, Pl. 19, Fig. P, from St. Albans.

<sup>x</sup> Ibid. Pl. 27, Fig. J. Chapel in Bishop's Palace, Durham, built by William the Conqueror.

<sup>y</sup> Ibid. Pl. 65, Fig. W, from Dunchurch, near Coventry.

<sup>z</sup> Milan erected 1387, thinnest columns from the measures given by Torre, p. 379.

<sup>a</sup> Westminster abbey, Langley's Gothic Architecture, Pl. A.

<sup>b</sup> Ibid. Pl. B.

<sup>c</sup> Carter, Pl. 18.



$9\frac{1}{4}$ .....	$6\frac{7}{8}$ .....	$1\frac{3}{8}$ .....	$1^d$
$9\frac{1}{4}$ .....	$6\frac{3}{4}$ .....	$1\frac{3}{8}$ .....	$1^e$
$10\frac{3}{4}$ .....	$6\frac{3}{8}$ .....	$2\frac{7}{8}$ .....	$1\frac{1}{2}^f$
$10\frac{1}{4}$ .....	$5\frac{1}{4}$ .....	$3\frac{1}{8}$ .....	$1\frac{7}{8}^g$
10 .....	6 .....	.....	..... <sup>h</sup>
11 .....	.....	1 .....	$2^i$
11 diam. of shaft	.....	$\frac{1}{2}$ a diam. ....	1 diam. <sup>k</sup>
14 .....	10 .....	$2\frac{1}{2}$ .....	$1\frac{1}{2}^l$
16 .....	9 .....	1 .....	$5^m$

And lastly, doors and windows appear to have been regulated in the following proportions :

Height as 1 to 1 of width <sup>n</sup>.

2 — 1, from ground to top of arch <sup>o</sup>, or to spring of arch <sup>p</sup>.

3 — 1 <sup>q</sup>.

3 — 2 from ground to spring of arch <sup>r</sup>.

3 —  $2\frac{1}{2}$  to spring of arch <sup>s</sup>.

$3\frac{1}{2}$  — 1 to top of internal arch <sup>t</sup>.

<sup>d</sup> Carter, Pl. 37, ground story columns of Canterbury.

<sup>e</sup> Ibid. Pl. 37, Fig. A, from Canterbury crypt, built at the end of the eleventh century.

<sup>f</sup> Ibid. Pl. 19, from St. Albans.

<sup>g</sup> Ibid.

<sup>h</sup> Ibid. Pl. 36, Fig. O, Alwalton church, Kent.

<sup>i</sup> Ibid. Pl. 68, O 2, from Wootton church, Huntingdonshire.

<sup>k</sup> Ibid. Pl. 70, A 2, from Chichester, of the reign of W. Rufus.

<sup>l</sup> Ibid. Pl. 23, A, from St. Bartholomew's, 1133.

<sup>m</sup> Ibid. Pl. 65, G 2, Goodrich castle.

<sup>n</sup> Ibid. Pl. 45, Fig. E, Sawtre All Saints.

<sup>o</sup> Ibid. Pl. 44, C E ; 56, G Q 2, from Salisbury cloyster.

<sup>p</sup> Ibid. Pl. 44, U.

<sup>q</sup> Ibid. Pl. 40, A, Dunstable, Bedfordshire ; 44, A, Clerkenwell.

<sup>r</sup> Ibid. Pl. 56, G. Ibid. 56, K, house at Salisbury.

<sup>s</sup> Ibid. Pl. 44, L, Daventry priory.

<sup>t</sup> Ibid. Pl. 56, C, door-way, Wells.

Height as 4 to 1 from ground to top of inside arch <sup>u</sup>.

4 — 3 from ground to inner arch <sup>x</sup>.

5 — 2 from ground to top of inner arch <sup>y</sup>.

5 — 3 <sup>z</sup>.

6 — 1 to spring of arch <sup>a</sup>.

The proportions of Gothic architecture, as it is called, may perhaps, however, in some instances, be found to approach nearer to those of Grecian than persons little acquainted with the subject would be inclined to suppose, or the advocates for this last-mentioned style be disposed to admit. Of the columns in Westminster abbey two have been measured by Batty Langley in 1742, who, in his and Thomas Langley's *Architecture restored and improved*, has given their dimensions. One of these was, as he says, erected by Henry III. about the year 1240; the other by Edward I. or at least in his time; and they are both clustered, consisting of a central column or cylinder, surrounded by four smaller ones. In that of the time of Henry III. the central cylinder is in height, including capital and base, five times the diameter of the whole cluster, and

<sup>u</sup> Carter, Pl. 44, Fig. Q, from St. Dunstan's, Canterbury.

<sup>x</sup> Ibid. Pl. 54, N, Lumley castle, Durham. Ibid. Pl. 56, A 2.

<sup>y</sup> Ibid. Pl. 57, A, door-way in Salisbury; 57, F, Dutling church; 57, Q, Salisbury.

<sup>z</sup> Ibid. Pl. 56, W, door-way crypt, Court of Requests; 57, T, Dunchurch.

<sup>a</sup> Ibid. Pl. 44, Fig. O, Ryton church. Some of the columns before mentioned, and of these arches, were measured from the original book by Mr. Smith, and some by the present author; but the measurements and computations of this latter person were afterwards examined by Mr. Smith.

seven times and one seventh of the diameter of the central column. The plinth is in height one diameter of the whole cluster. In the column of the time of Edward I. the central cylinder is in height five times of the total diameter of the whole cluster, and eight times and about two elevenths of the diameter of the central cylinder. The plinth is one diameter of the central cylinder, and the capital one half of one diameter of the same cylinder.

Vitruvius \*, speaking of the interior distribution of a building, says, its width should be half its length, its nave one fourth part longer than it is wide; and the three other parts will then extend to the further end.

In another place † he describes the five sorts of buildings; the first of which is where the columns are only one diameter and an half asunder; the second, where they are two diameters—but both these are too close; the third, where they are three diameters, but this is too much: the fourth, he says, is so great a distance, that no stone or marble can be used, but only timber beams can reach it; and the fifth, which he prefers to them all, has two diameters and a quarter. In the fourth of these kinds the columns ought to be eight diameters high; in the third, eight and an half; in the second, nine and an half; in the first, ten; and in the fifth, eight and an half.

The Doric column, he elsewhere ‡ says, speaking of the three orders of columns, was at first six diameters high, including its capital and base; but afterwards it

\* Lib. iv. cap. 4.

† Lib. iii. cap. 2.

‡ Lib. iv. cap. 1.

was extended to seven diameters ; and in another place\* he notices that the Doric column is fourteen modules high, one module being half a diameter.

The Ionic was at first eight diameters high, but afterwards increased to eight and an half ; and the Ionic capital he fixes at one third of a diameter for its height †.

The proportion of the Corinthian is, according to him, the same as the Ionic, excepting its capital ; but the capital in the Corinthian is one diameter ‡.

In Tuscan buildings the width should be five sixths of the length.

They should be internally divided in length into two, and of those two one be given to the choir, the rest to the nave.

The width is to be divided into ten portions, three of which on each side are to be set apart for little oratories, or given for the aisles : the other four should be reserved for the middle.

The columns should be in height seven diameters.

The base, half a diameter.

The capital, half a diameter.

The height of the columns should be one third of the width of the building §.

Ionic doors and windows are, he says, in width thus regulated : the height being divided into two and an half, one and an half is the width ||.

The Doric door should be so high, that the top of its cornice should range in a line with the capitals of the external columns, and the height should be so set-

\* Lib. iv. cap. 3.

† Lib. iv. cap. 1.

‡ Ibid.

§ Lib. iv. cap. 7.

|| Lib. iv. cap. 6.



tled as that the height of the building from the ground to the vaultings or wood-work should be divided into three and an half. Of these, two should be used for the admission of the light, which should be subdivided into twelve, and five and an half twelfths assigned to the width \*.

It is needless to produce any further proofs of resemblance than to say, that in every Gothic cathedral as yet known the extent from north to south of the two transepts, including the width of the choir, if divided into ten, as Vitruvius directs, would exactly give the distribution of the whole. Three arches form the north, and three the south transept; the other four give the breadth from one transept to the other. One division of the four being taken for each of the side-aisles of the nave, and two left for its centre walk, the complete distribution of the nave is also given. Of the proportion of one third of the whole width as the height of the columns, the cathedral of Milan is a decided instance; the two transepts together are one hundred and ten cubits, the breadth of the choir twenty-eight, making together one hundred and thirty-eight; and the height of the columns is forty-six†.

As to the variations apparent in the proportions of columns before stated, it is to be observed, that though a general average proportion is settled and established among architects, as that by which the five orders of Grecian architecture should be regulated, there yet is in many instances a very great difference in the proportions. Edward Hoppus, a well-known architect, and

\* Lib. iv. cap. 6.

† Torre Ritratto di Milano, p. 379, &c.

the author of a very excellent compendium, entitled *Proportional Architecture, or, the Five Orders regulated by equal Parts*, first published in a very thin octavo in 1733, without a date: and again in 1736; allows to the Tuscan, including its base and capital, seven diameters; to the Doric, eight; to the Ionic, nine; to the Corinthian, nine and an half; and to the Composite, ten. But in a print, entitled *A Geometrical View of the Five Orders of Columns in Architecture, adjusted by aliquot Parts*, engraved by Noual, and printed for Mess. Taylor in Holborn, the Tuscan is represented as seven diameters; the Doric, eight; the Ionic, nine; and the Corinthian and Composite, ten. Other variations it is unnecessary to notice; but sufficient to say in general, that the disparity of proportion, as given in authors of established reputation, was such as to induce Mons. Roland Freart, Sieur de Chambray, to publish in folio in French in the year 1650, *A Parallel of Ancient and Modern Architecture, taken from ten different Authors*, Palladio, Scamozzi, Serlio, Vignola, Daniel Barbaro, Pietro Cataneo, Alberti, Joseph Viola, John Bullant or Bulliant, and Philibert De Lorme; in which, by means of plates engraven from the designs, as represented in their works, he exhibits and compares their variations with each other. The book was translated into English by Mr. Evelyn, and published in that language in 1664; and was used by the workmen in the erection of St. Paul's \*.

\*: See the Dedication to Sir Christopher Wren, dated 1696-7, prefixed to the Account of Architects by Mr. Evelyn at the end of his translation, edit. 1733.

After this it can never be said with truth, that Gothic architecture, meaning by the term, however improperly used, the style of the middle ages, had no rules or proportions. That such an idea should ever have been entertained by any person whatever, is astonishing; but pains had never been exerted to adjust, by measurement, any thing like an average proportion. No one, indeed, seems to have had any conception how such a conclusion was to be obtained; and what had never been attempted, was supposed to have been left undone, not for want of experiment, but because it had failed in the trial. On the contrary, when this style is objected to, as it often is, on account of the slenderness of some of the pillars which compose a cluster, it is evident such persons as make the charge are not sufficiently informed; for it is not the measure of any single member, but of the whole cluster, that is to settle the proportion. With equal justice they might censure a fluted Grecian column of any kind, especially if the lower parts of its flutings are cabled or staved, because the flutings or staves were too high, and not regulated by the number of diameters allowed by that order for the height of the column.

In a work like the present, which has for its object the ascertainment of the principles of Gothic architecture, it cannot be justly thought foreign to the purpose to endeavour to direct the public attention to the very able and judicious manner in which the repairs and restorations of the chapel of Henry the Seventh at Westminster are proceeding. To restore this edifice, one of the most beautiful structures of the kind in this kingdom, or perhaps in Europe, was an attempt pecu-

liarily arduous, on account of the delicacy and multiplicity of its decorations. But as well from the diligence exerted in forwarding the work, as from the skill shown in each part, the public have a very fair prospect of seeing it, within such a period as many persons now living may reasonably hope to reach, restored to its pristine beauty. The undertaking, and the mode in which it has been so far accomplished, are equally an honour to the age and the nation; and the Abbey mason, Mr. Gayfere, under whose personal direction and superintendence the whole has been conducted by his workmen, is entitled to the thanks of all the real antiquaries in the kingdom for his able, careful, and accurate restoration of the different ornaments. Every candid judge who examines it with sufficient attention, as several have done, will be, like them, of this opinion; and though cavils and captious objections have been raised against it by one who might reasonably have exulted in his skill had it been his own production, yet the public have great cause to rejoice that the work has been placed in such able hands as the present, as the opinions of that person on this subject are destitute of sufficient foundation, and in some instances contradict unequivocal facts, which if necessary could here be stated.



## CHAPTER XII.

*Windows first formed of. separate Pieces of coloured Glass in Imitation of Mosaic—Further Progress of the Art of painting on Glass—Mode of proceeding as used in the early Windows—The Art improved by Albert Durer and Lucas of Leyden—First carried into Italy by a Painter of Marseilles—Instances of Excellence—First Process in Painting—Mode of preparing the Colours not lost—What Sorts of Glass used—Method of laying on some of the Colours—Painting on Glass, how performed—Materials for colouring the Glass black, white, yellow, red, green, blue, purple, violet, how produced—Outlines, how to be put in—Colours, how to be applied—Furnace for Baking—How to bake in the Colours.*

FELIBJEN, in his *Principes de l'Architecture*, third edition, 4to. Paris, 1699, inserts, p. 180, a chapter on Glass, in which he says, that at first transparent stones, such as agate, alabaster, and others, were used in buildings to admit the light and keep out the cold and the wind. Glass having been afterwards invented, that material was substituted in the place of the former, and these glass windows were made in the following manner:

In the foundries glass was made of different colours; the ancient artists, therefore, took some such pieces to put in the windows, arranging them in compartments

like mosaic, and this was afterwards the origin of painting on glass; for observing what a beautiful effect was thus produced, they were not in after-times contented with this assemblage of pieces of various colours, but were desirous of representing all sorts of figures, and entire histories. At first this was done upon white glass, and the colours were tempered with size, as is the case in painting in distemper. But because it was soon found that these could not long resist the injury of the air, the artists sought for other colours, which after having been laid on the white glass, and even on that which had been already coloured in the glass-houses, might sink into and incorporate themselves with the glass itself upon its being put into the fire. In this they completely succeeded, as is evident from the beauty of the ancient glass.

When the workmen were desirous of making windows of extraordinary beauty, they employed the glass which had been already coloured in the glass-house to make the draperies of the figures, and they only marked the shadows in it with some touches and hatchings with black. For the carnations or flesh-colours they chose glass the colour of which was a transparent red, on which they drew with black the principal features of the face, and the other parts of the body.

But to make the carnations and draperies on white glass, they laid their colours, transparent or opaque, without demi-tints, either strong or weak, as the painting demanded. Thus this first sort of works, such as we see in the more ancient of our churches, and which were made before the sixteenth century, are of a Go-

thic manner, and extremely barbarous as far as regards the drawing, and the preparation of the colours.

When in France and Flanders painting began to improve, this gross manner was changed, and the honour of the finest works which have been done upon glass is due to the French and the Flemings. A painter of Marseilles communicated the first knowledge of this species of painting to the Italians when he went to Rome in the pontificate of Julius II. After him Albert Durer and Lucas of Leyden improved the art still further; and a number of works so excellent have been produced, that nothing more exquisite can be desired either for beauty of design or management of the colours. As instances of excellence, which he says have been done after the designs of able masters, he mentions those in the church of St. Gervaise at Paris, after John Cousin; in the chapel of Bois de Vincennes, of which Lucas Peni, an Italian, made the cartons; in the castle of Anet, in that of Gaillon, in the church of St. Owen at Rouen, and in other places.

In p. 182 he proceeds to direct the mode of painting on glass in the following manner. Before any one begins to paint upon glass, the whole subject is to be drawn and coloured upon paper. Then such pieces of glass are to be chosen as are fit for painting the figures in portions, so that the pieces may join in the outlines of the body and the folds of the draperies, in order that the lead which is used to hold them together may not spoil the carnations, and the most beautiful parts of the draperies.

When all the pieces are cut according to the design, and correspondently to the size of the work, they are to

be marked with numbers or letters, to know them again. Then every piece is to be painted with colour, according to the design which the painter has before him; and sometimes it is done only in white and black, which is called *Grisaille*.

In the ancient glass some very beautiful and very lively colours are seen, which are not to be found now. It is not that the invention is lost, but because persons will not risk so great an expense, or take the necessary pains to make them, since in fact labour is not dearer than it was heretofore.

These fine pieces of glass, as made in the glass-houses, were of two sorts. Some were entirely coloured, that is to say, where the colour was spread through all the mass of glass; but others, which the workmen used commonly and more willingly, had the colour only on one side, into which it penetrated more or less, according to the nature of the colours, for yellow enters deeper than the others. Although these last did not contain colours so bright and lively as the former, they were more convenient for the glaziers, because upon the same piece of glass, though already coloured, they were accustomed to employ other colours, when they wanted to ornament the draperies, enrich them with flowers, or to represent other decorations of gold, silver, and different colours. For this purpose they used emery, with which they rubbed the piece of glass on the side which was already charged with colour, till they discovered the white glass, according to the work which they intended to produce; after which they covered with yellow or such other colours as they pleased, the other side of the glass, that is to say, where it was



white, and where they had not scratched it with emery. This method they observed, to prevent the new colours from mixing with the others, when the pieces of glass were put into the fire.

Painting on glass is performed with the point of an hair pencil, especially for the carnations; and the colours are laid on, tempered with water and gum in the same manner as is done in miniature.

When any one paints on white glass, and wishes to give smart touches to mark the hairs of the beard, the hair of the head, and other strong lights, whether it be on the draperies or elsewhere, he makes use of a little point of wood, the end of the handle of the pencil, or a pen, to take away from the back of the glass the colour which had been put in the places where he means that none should appear.

The materials necessary for colouring glass are the sparks or scales of iron, which fall from the anvils of blacksmiths when they forge; white sand (or siliceous earth), or the little flints of a clear river, red lead, saltpetre, rocaïlle \* (which is nothing but the little round grains, green and yellow, which the tradesmen sell, and the method of making which, he says, he shall show hereafter), silver, harderic, or Spanish iron ore †, manganese, zaffre ‡, red ochre, gyp, or transparent plaster like talc, and litharge of silver.

\* Felibien, p. 508, says, that rocaïlle means the little grains of glass which are used to make the colours for painting on glass.

† Felibien, p. 183, in a note, says, that harderic is a mineral, and that it may be produced with filings of iron and sulphur, which is to be stratified in a covered crucible, and that it is then to be taken out and put into the fire for five or six hours.

‡ Saffre, or zaffre, says Felibien, p. 510, is, according to Cardan,

All these colours are to be ground separately upon a plate of copper a little hollowed, or in the bottom of a basin, with the water in which gum-arabic has been dissolved.

To produce *black*, some scales of iron must be well ground, for two or three hours, or more, on the plate of copper, with one third part of *rocaille*, and then be put into some vessel to be preserved. As soon as it becomes red in the fire, it is a good method to put into it a small quantity of soot, grinding this with it; or copper burnt, mixed with the sparks of iron, is better, for the soot has no body.

For *white*, siliceous earth must be used, which is to be heated red-hot in a crucible. It must be poured out into common water to calcine it, and afterwards be reduced into powder. These ingredients are to be pounded in a marble mortar, with a pestle of the same, and to be ground again upon a marble. One fourth part of saltpetre is then to be mixed with them, and the whole is to be calcined. They are to be pounded and calcined once more in a quick fire as before, and to be taken out of the crucible to preserve them. When this colour is to be used, as much plaster or gyp must be added to it, which must be separately baked, and as much *rocaille*; and the whole must be ground together on the plate of copper.

To make *yellow*, silver must be put in small pieces

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a mineral earth of a grey tint, which colours glass, and gives a blue colour fit for enamel. Cesalpinus, and others, place it in the rank of mineral stones; and it is called *saffre*, because it gives the colour of the sapphire.

to bake in the crucible, mixed with sulphur or saltpetre. When it is entirely heated, and taken out of the fire, it is to be emptied into a vessel of water. It is then to be pounded in a marble mortar, till it becomes fit to be ground on the porphyry stone, which it will be in the course of half a day, moistening it with water when it shall become dry. When ground it must be mixed with nine times as much red ochre, and the whole ground together for an hour.

To make *red*, litharge of silver must be used; scales of iron, gum-arabic, each the weight of an escu (or crown piece); harderic, or iron ore, half an escu; rocaille, three ounces and an half; sanguine\*, three ounces. The rocaille, the scales of iron, the litharge, and the harderic or iron ore, are to be ground together for a full half hour on the plate of copper. After this, the sanguine is to be pounded very small in an iron mortar very clean, and then put aside. Next, the gum-arabic is to be ground in the same mortar, in order that it may extract what remains of the sanguine; for it is necessary that the gum should be so dry, that it may easily be reduced to powder. When thus pounded, the gum and sanguine are to be mixed, and turned out on the plate of copper, where the other drugs already are, and the whole ground together as quickly as possible; for the sanguine wastes itself in grinding too much this time. Care must also be taken to keep the whole soft, and of the same consistence as other colours; neither so moist that it

\* Felibien, p. 511, describes sanguine as a red stone, of which crayons for drawing are made. It seems, therefore, to be red chalk.

will run, nor so hard that it cannot be tempered with the finger. It is, however, much better that it should be a little hard than too soft. This composition being placed upon the plate, must be put into a glass pointed at the bottom, which is of great importance, and it must then be poured into a little clear water. In the next place, this substance is to be tempered with the end of the finger as much as possible, a small quantity of water being again added to it, and be made of the same consistence, or a little more liquid, as a stale yolk of an egg. Thus tempered, it ought to be covered with a paper to secure it from dust, and must be suffered to rest for three days and three nights without being moved. Afterwards, the purest part of the colour, which swims at top, must be poured off into another vessel of glass, care being taken not to shake any part. This colour being thus put away, must be permitted to rest two days more, after which it is to be poured out as at first.

This last colour is next to be placed upon a piece of glass a little hollowed ; and the whole, laid on some sand in a common earthen vessel, is to be set on the fire to dry slowly, and to preserve it. When it is intended to be used, a drop of clear water is to be poured on a piece of glass, with which as much colour as is necessary is to be tempered. This colour serves for the carnations ; for as for that which is the thickest, and remains at the bottom of the glass, it is only fit to make some tints for wood or draperies.

*Green* is produced from æs ustum, or copper burnt, one ounce ; white sand, or siliceous earth, four ounces ; and red lead, one ounce. The whole, after being



ground together in a mortar of bronze, is to be put into a fire of live coal in a covered crucible for about an hour, and then taken out. When cool, it is to be ground dry in the same mortar ; and then adding to it one fourth part of saltpetre, it is to be again placed in the fire in the same crucible for two hours. It is next to be taken out and ground as before; and adding to it again a sixth part of saltpetre, it is to be replaced in the fire for the third time, and to be left there for two hours and an half, or thereabouts. After this, the colour, hot as it is, is to be taken out of the crucible with an iron instrument; for it is tenacious, and difficult to get out. It is a good method to lute the crucibles, because few are found sufficiently strong to resist the force of the fire necessary for these calcinations.

*Blue, purple, and violet*, are produced in the same manner as green, only changing the scales of copper for other materials: as, for instance, to make blue, we must take zaffre; for purple, manganese; and for violet, zaffre and manganese an equal quantity of each. The other materials must be the same as in the case of green.

*Yellow* rocaille requires three ounces of red lead and one ounce of sand (or siliceous earth), which must be calcined, as has been said. And for *green* rocaille only one ounce of red lead and three ounces of sand are necessary.

The tints proper for carnations are made with harderic or iron ore, and as much rocaille: after having pounded them together, they are to be ground on the basin.

The colour for hair, for trunks of trees, and other things of a like kind, is produced from harderic and scales of iron, an equal quantity, and of rocaille as

much as of both the others. The whole is to be ground together, and this will make a *yellowish red*.

When any one means to paint, let him choose Lorraine glass, which inclines to the white yellow, because that bears the fire the best, and receives the colours better than any other. When the subject which he is to paint is not large, the glass is to be put upon the drawing intended to be copied, the outlines of which are to be traced with a pen or hair pencil, and with the black colour already spoken of. If this colour is dry, it must be ground an hour on the copper with water, and a small quantity of gum-arabic, dried as before directed, is to be added to it. It must be expeditiously mixed; and if the quantity of colour is equal in size to a nut, as much gum-arabic as is equivalent to a small nut, must also be put into it. The gum must be dissolved before the colour is used, which ought to be neither too clear nor too thick; and when these outlines are marked, they must be suffered to dry for two days.

A wash is then to be applied to them, made of six or seven grains of gum-arabic, well dried, mixed with six or seven drops of urine, and as much black as necessary; so, however, as not to hinder the colour from being very clear. To make it well, the black ought to be put into a little basin of lead, and be covered with this wash, in order that it may not dry so soon; and when the outlines have been left for two days to dry, this wash is to be passed equally and very lightly over the whole, in order that the outlines may not be effaced; after which the work is to be permitted to rest for two more days. This wash serves for the first shadow or demi-tint; and for the second tint the colour must be

repassed with the pencil over the necessary places. To produce the lights and heightenings, a pen, or the handle of the pencil, is to be used, as has been already mentioned; and as much of the first wash is to be removed as shall be deemed necessary. This is the method for works in white and black, or in grisaille.

As for the colours, when the black is applied as above, and dried for two or three days, they are to be laid on in the following manner—

Enamel colours, such as blue, green, and purple, must be expeditiously laid on the piece of glass with the pencil, after having been well tempered with gum-water. The other colours must also be employed with caution, according to the work which is to be executed; and care must be taken not to efface the outlines; or the colours may be conveniently applied on the other side of the glass.

Yellow is most frequently made in the furnace; but in using, it must always be laid on the back of the glass very even, more or less charged, according as it is wished, and never near blue; because, in being melted and reheated in the fire, these two colours would only make one, which would be green. It is for this reason necessary, as has already been said, to lay on the yellow on that side where there are no other colours; for it sinks through the whole thickness of the glass. This other colours do not; for these last having more body, do not penetrate so far, and some of them even remain on the surface.

When the colours are to be baked, and the glass put in the fire, after being painted, a small square furnace of

brick † is to be made, which each way should not be more than about 18 inches, that is to say, however, according to the quantity of work which has been prepared. At the lower part, and six inches from the bottom, an opening is to be made to put in and stir the fire. Above this opening, two or three square bars of iron are to be placed, which will cross the furnace, and divide it into two. Over these bars, and to the right of the door below, a small opening is to be left of about the thickness of two fingers in height and breadth, to let the trial-pieces pass through while the work is baking.

The furnace thus prepared, an earthen pan of the form of the furnace must be procured, of such a size, as that, being laid on the bars of iron, it shall want about three full fingers breadth, or more, of touching the walls of the furnace; for which reason it ought to be square, and it should be of good earth, well baked. Its bottom should be about the breadth of two fingers in thickness, and its height at its sides about half a foot. After this a quantity of plaster in powder well sifted, and three times baked in a potter's furnace, or a tile-kiln, must be provided, or rather of quicklime well separated or sifted. Some persons use cinders well burnt, but they are not so well adapted for fitting the pieces intended to be baked.

The pan being placed on the bars in the middle of the furnace, a portion of the plaster in powder, or of the lime,

† Since this author wrote, considerable improvements have taken place in chemistry, and it is believed that a more convenient mode has been found of constructing a furnace for this purpose. But notwithstanding this, the directions in the text could not have been properly omitted, because they show how the furnace, in whatever way it may be constructed, is to be used.



must be spread there, about half a finger's breadth in depth, as equally as possible, and above some pieces of old broken glass are to be placed, and then some powder, then some old glass, and then some powder, so that it may have three beds of plaster or lime, and two of old glass, which is called *stratum upon stratum*. On the third bed of plaster the pieces which have been painted should begin to be spread. They are to be laid in beds, so that there may be half a finger's breadth of powdered plaster or lime very even spread between each piece of glass; and continued to be ranged thus till the pan is full, if the number of pieces to be baked is sufficient to fill it. After this, the last bed is to be covered with some of the powder; and it must be remembered, that the pan should have an hole in front, to answer to that of the furnace above the door through which the fire is put, in order that the pieces of glass with which the trials are made, passing straight from one to the other, may enter into the pan, and there bake the same as the rest.

All things thus disposed, some bars of iron are to be placed, which may rest on the walls of the furnace; and the pan is to be covered with a large tile made on purpose, if it can be had, or with several others. They are to be ranged and luted as closely as possible with some soft earth or mould, so that there may be no aperture except at the four corners of the furnace, where one ought to be left of about two inches in diameter.

The furnace, thus closed, is to be heated with a few lighted coals at the entrance of the door only, and not within. After having been in this state for an hour and an half or two hours, the fire must be pushed a little

further forward, and then it is to be left for another full hour, at the end of which the fire is to be suffered to enter under the pan by degrees. When it has been thus for about two hours, it must be increased by little and little, and at the end of two hours it is to be further augmented by filling the furnace gradually with good charcoal from young wood, so that the flame may go out at the four holes of the four corners, and at that which ought also to be in the middle. This is called the chimney; and the fire ought to be very brisk and ardent for the space of three or four hours. During this time, and to the end, some of the proof or trial pieces, which are in the small aperture of the furnace and of the pan, should be drawn out, to see if the colours are melted, and if the yellow is produced.

When the colours are almost produced, some very dry wood ought to be put into the furnace, but cut into small pieces, in order that they may go entirely in at that place. For, to do the work well, the door of the furnace ought to be shut during the whole of the baking, except at the beginning, and when the fire is yet at the entrance. The fire of wood which is lighted towards the end, ought to cover the whole of the pan in which is the work, till it is perceived that the whole is baked, which usually happens after the fire has been in it for about ten or twelve hours, or eight or ten, if the hottest degree of fire is given to it at first. But this is not so good a method, because by these means the whole is often lost by burning the colours and breaking the pieces.

Caution must be used when the bars of iron become cherry-coloured or sparkling, for that shows that the baking is advancing.

EXPLANATION OF THE PLATES.

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PLATE I.—An internal View of the Vestibule of the Church of the Abbey of Clugny, from the Side of the Entrance. Taken from one in the *Description particulière de la France*, tom. iii. seizième livraison, No. 56, engraven by Auvrai from a drawing by Lallemand. It is here copied from the book itself by Mr. Henry Inwood, and is of the same size with the original.

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PLATE II.—An internal View of the Nave of the same Church; from one which occurs in the same work, and on the same plate with that above mentioned. This, like the former, is also engraven by Auvrai from a drawing by Lallemand, and has, like that, been copied from the book itself by Mr. Henry Inwood, of the same size as the original.

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PLATE III.—Fig. 1. A Compartment, from a Picture in Mosaic, in the Oratories of St. John the Baptist and St. John the Evangelist, in the Lateran Church at Rome. From Ciampini *Vetera Monimenta*, fol. Roma, 1690, vol. i. plate 75. This piece of mosaic, Ciampini,

vol. i. p. 238, says, was done at the command of pope Hilary, in the year 462.

Fig. 2. Another Compartment from the same plate and subject.

Fig. 3. A View of the Entrance to the Oratory of St. Thomas the Apostle, built by Symmachus, in the Vatican Church at Rome, from Ciampini *De sacris Ædificiis*, plate 22. Some doubt may perhaps be reasonably entertained whether by Symmachus be meant the pope of that name, or whether it is only the name of the architect. The former seems the more probable, especially as Symmachus, who is erroneously styled the first \*, was elected pope in 498, and died in 514 †, and was a great rebuilder and restorer of churches. It is, however, by no means quite clear; for Symmachus, who was one of the architects to Theodoric king of the Goths, was about this time consul at Rome, as pope Hormisda, the successor of Symmachus the first, is said to have been pope from the time of the consulship of Senator to that of Boetius and Symmachus ‡. Though Platina has described Symmachus by the appellation of Symmachus the first, it appears by the alphabetical index of popes, prefixed to his volume, that there never was another pope of that name; so that whether the name above mentioned be that of the pope or of the architect, is of little moment as to the age of the erection; for pope Symmachus, as has been seen before, died in 514, and Symmachus the architect in

\* Platina *De Vitis Pontificum*, fol. Coloniz, 1574, p. 63.

† Panvinii *Pontificum Romanorum Chronicon*, at the end of Platina, p. 14.

‡ Platina, p. 64.



526 §. It is almost needless to observe that the arches are pointed.

Fig. 4 is the geometrical process of raising an equilateral triangle from a given base line, as directed in the first proposition or problem of Euclid ||, and which so necessarily involves the construction of the pointed arch, that it is impossible it should not have been known to all acquainted with Euclid's writings. The early architects certainly were not ignorant of Euclid's works, as they had been translated from Greek into Latin by Boetius ¶. Cassiodorus had recommended Euclid to Theodoric king of the Goths\*; and Boetius's translation is mentioned in a letter written by Cassiodorus to Boetius, in the name of Theodoric†. The process is so simple, that it scarcely needs explanation, though, to render it still more clear, it is thought advisable to state it unincumbered with mathematical and scientific directions. An horizontal line being drawn, is to be divided equally into three, one division of which is to be taken for the semi-diameter of a circle; and a circle is to be struck accordingly. Another division is then to be taken in like manner as the semi-diameter of another circle; and this second circle, being struck accordingly, will intersect the first in the manner represented in the Plate. This intersection exactly forms the Gothic arch; and to complete the triangle nothing more is necessary than to draw straight lines to the points at which the two circles intersect each other.

§ Felibien, *Recueil Hist. de la Vie des Architectes*, p. 139.

|| See Simson's *Euclid*, 8vo. Edin. 1767. p. 7.

¶ Cassiodori *Opera*, vol. i. p. 21.

\* *Ibid.* vol. i. p. 112.

† *Ibid.* vol. i. p. 21.

It is observable that this mode of intersecting two circles produces, in fact, two pointed or Gothic arches set base to base; and that this very form is termed by Albert Durer, in his *Geometry*, *Vesica piscium*, which apparently means, the fish's bladder†. But through the means of an intelligent friend it has been learnt from those conversant in natural history and anatomy, that the bladder of a fish is not of that form. The fact is, that it resembles the body of a violin, having, like that, two recesses, one on each side. *Vesica piscium* cannot, therefore, signify a fish's bladder, but a bladder, which, when filled with wind, would be in the form of a fish. As a fish is narrower at the point of his nose and just above the fork of his tail, and gradually swells towards the middle, a bladder so shaped would exactly resemble this geometrical form.

Fig. 5 is also taken from Ciampini *Vetera Monumenta*, vol. i. plate 25. The original was a painted window in the church called *Basilica Siciniana*, which was afterwards denominated *St. Andrew in Barbara*. It was one of the great south windows, and had been blocked up by a wall in order to prevent the too great immission of light\*. This representation, which is of the crucifixion of *St. Peter*, and the martyrdom of *St. Paul*, is in the original accompanied with figures, which in the present engraving are omitted, because the geometrical form of the pointed arch was alone requisite. The whole may, however, be seen in Ciampini, who says,

† Lib. ii. *Dureri Institutionis Geometricæ*, fol. Arnheim, 1606, p. 56.

\* Ciampini, vol. i. p. 63.

p. 64, that the painting is very ancient, and that the dresses are of the fifth century. He conjectures that it might have been painted by order of pope Simplicius, who put up the mosaic work in the tribune of the same church; and adds, that the characters of the writing over this part of the painting strongly confirm the idea that it is of the fifth or sixth century.

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PLATE IV.—A Plan of the Church of the Nativity and Manger at Bethlehem. Taken from Bernardino, *Trattato delle Piante & Immagini di sacri Edifizi di Terra Santa*, 4to. In Firenze, 1620, p. 8; which, p. 1, he describes as being the beautiful and venerable church erected by St. Helena, and dedicated to the Virgin Mary. The exact correspondence between this and many Gothic erections in several particulars, and especially with the church of Milan in the number and distribution of the side-aisles of the nave, is deserving of notice; as it is also, that, on measuring the parts, it is found that this church is regulated by the rules which Cæsar Cæsarianus has laid down as the governing principles for the plan of the church of Milan, and other Gothic edifices; for it is exactly two triangles in length, and one in width. As to the parts of this church, the following is the substance of the explanation with which Bernardino, in the original, has accompanied this plate, changing only the figures of reference for letters.

A. A cistern.

B. The body of the church.

C. The font where the Greeks baptize.

- D. The altar where the Magi were placed when they came to worship and present their gifts to the infant King of the Jews.
- E. Stairs to descend to the holy manger.
- F. The altar of the Circumcision, where the circumcision took place eight days after our Saviour's birth.
- G. Steps leading to the tower.
- H. The door leading into the convent of the monks.

This and the other subjects inserted in Bernardino's work are, as he himself, p. 1, mentions, all measured by the usual measuring-rod of the kingdom of Naples, which he describes as consisting of 10 palms, each palm of 12 inches, and each inch of 5 minutes. The palm of Naples is said by Bibiena \* to be as  $806\frac{1}{2}$  to 1000 of the Paris foot; that is to say, reckoning the Paris foot as comprising 1000 parts, the Neapolitan palm would contain 806 of those parts, with the addition of the above-mentioned fraction of another. The London foot he estimates in like manner as  $938\frac{1}{4}$  to 1000 of the Paris foot †. Rejecting, therefore, in both cases the fractions, and multiplying the palm reckoned at 806 by 10, the number of palms which the rod contained, it will produce 8066. This, divided by 938, the content of the London foot, will give 8 feet with a remainder of 562, which is, as near as may be, about three fifths; so that the Neapolitan rod may be fairly estimated as 8 feet and three fifths of our measure.

\* Bibiena Architettura, fol. Parma, 1711, p. 26.

† Ibid. p. 26.



PLATE V.—The Ground-plan of the Church of the Holy Sepulchre at Jerusalem ‡. Taken from Bernardino, p. 31 : but his references and explanations very often do not correspond. The following therefore seem to be the most remarkable spots of the church, as well as they can be discovered from Bernardino, Sandys's Travels, and a model of the church itself in the possession of the author of this work.

1. The column where our Saviour was scourged.
2. His place of confinement.
3. Where the soldiers cast lots for his garments.
4. Where the cross was found.
5. Chapel of the empress Helena.
6. Where Christ was crowned with thorns.
7. Where he was crucified.
8. The chapel of the angel.
9. The holy sepulchre.
10. Where our Saviour appeared to Mary Magdalen.
11. The apartments of the Nestorians.
12. The court before the church.
13. Part of the bell-tower of the church.
14. Where Mary the Egyptian stood.
15. Stairs to Mount Calvary.
16. Entrance to the church.

‡ About four years ago this church was entirely destroyed by fire. Bernardino's work, which before was scarce, is, by this accident, considerably increased in value, as it contains views, from actual measurement, of so celebrated a building, now no longer existing.

17. Sepulchre of Godfrey of Boulogne, and Baldwin his brother.
18. Sepulchre of Melchizedek.
19. Apartments of the Gorgians.
20. Sepulchres of the wife and daughter of the king.
21. Aperture of the rock occasioned by the earthquake.
22. Where the Virgin Mary stood at the crucifixion.
23. Apartments of the Syrians.
24. Stairs to the apartments of the Armenians.
25. Apartments of the Abyssinians.
26. Apartments of the Cophts.
27. Sepulchre of Joseph of Arimathea.
28. Flight of steps and door.
29. Font of the Greeks.
30. Apartments of the women.
31. Vestry of the Greeks.
32. Stairs to Mount Calvary.
33. Altar of the Greeks.
34. The choir.
35. Where the Greeks say is the middle of the world.
36. The patriarchal seat.
37. High altar.
38. A flight of stairs.
39. Where the title of the cross was placed.
40. Where a disciple of Christ lived many years.
41. Entrance into the monastery.

This church is acknowledged to have been often taken as the model for Gothic cathedrals. Its plan, like that of Milan, consists of two triangles in length and one in width ; and it is evident on inspection, that the idea for the internal appearance of the transept, for the four

large columns supporting a cupola or tower over the centre, the mode of placing the choir, partly between them and partly beyond towards the east, the hint for chapels round the ambulatory at the east, and that for the Virgin Mary's chapel, which usually occurs at the east end, were in all probability derived from similar circumstances and situations in this church, which the supposed identity of the spots on which the several events are said to have happened, had for that very reason decided and settled in this building.

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PLATE VI.—A sectional View of the Arch and Cupola over the Choir of the Church of the Holy Sepulchre. This is also taken from Bernardino, p. 39, omitting only the sectional view of the side-aisles, which, for the present purpose, were not necessary to be inserted. It exhibits the large clustered columns supporting the dome, which, as having been erected so early as the year 1048\*, may well be supposed the archetype for those which were afterwards introduced into modern Gothic architecture; and it is worthy of notice, that although the arch of the cupola is not pointed, but rounded at top, yet its curve, as has been ascertained by compasses, is exactly that of the pointed arch with the top a little rounded.

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PLATE VII.—Fig. 1. An internal View of the Elevation of the Vestibule of the Church of the Holy Se-

\* See p. 99 before.

pulchre. From Bernardino, p. 36. In this, though circular, are certainly seen the first ideas for the side-aisles and vaultings over them, so frequently occurring in Gothic erections.

Fig. 2. An external View of Part of the Baptistry of St. John at Pisa, erected, according to Vasari, in 1060; but, as Della Valle says, in 1152. This is taken from a larger print in the *Theatrum Basilicæ Pisanæ*, engraven by Jo. Hieronymus Frezza, from a drawing by Joseph and Francis de Milanis of Pisa, and is remarkable as exhibiting two arches under one pediment, accompanied with pinnacles, tabernacles, here placed on the roof, and ribs extending all the way up, and dividing the roof into compartments; which ribs are apparently formed of ornaments resembling the crockets in Gothic architecture.

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PLATE VIII.—A Plan of the Church of Milan, as exhibited by Cæsar Cæsarianus in his translation of Vitruvius, fo. 14, a; an explanation of which, as given by himself, has been inserted in a former page.

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PLATE IX.—A sectional View of the Nave with its Side-aisles, and the centre Tower of the Cathedral of Milan, taken also from the same author, fo. 15, a, and already explained.

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PLATE X.—A sectional View of the Nave, Side-aisles, and centre Tower of the same Cathedral, with



the addition of an external representation of the Transept. This, as well as the two former, is taken from the same author, fol. 15, b, and, like them, has been also already explained.

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PLATE XI.—Plans of Gothic Columns, with Elevations of their Bases and Pedestals, as given by Albert Durer, in his *Institutiones Geometricæ*, fol. Arnheim, 1606, p. 78.



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N. B. The Letter *n* after any number refers to a Note in that Page.

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**AGE.** The age of a building always to be computed from its commencement, and not from its termination, 140.

**Agricola**, St. bishop of Chalons on the Saone, an architect, 50.

**Aix-la-Chapelle.** The chapel there erected by Charlemagne, 60. Columns to construct it procured from Ravenna, *ibid.* A coin of Charlemagne's representing it with a pointed arch, 61. The authenticity of this coin examined, *ibid.* This coin affords ground to suppose this chapel contained pointed arches, *ibid.* No reason to question its authenticity, 92.

**Alaric**, king of the Goths, besieges and takes Rome in 409, 30.

**Aloisius**, one of the architects of Theodoric king of the Goths, 34.

**Alypius** of Antioch employed in 363 to rebuild the temple at Jerusalem, 27.

**Amiens**, the cathedral there begun in 1220 by Robert de Lusarche, continued by Thomas de Cormont, and completed by Regnault his son, 138, 139. Described, 139. Very little Gothic work so perfect as this cathedral, *ibid.*

**Anthemius** of Tralli, a city of Lydia, one of the architects of the church of Santa Sophia at Constantinople when rebuilt by Justinian about 527, 28.

**Arch** of Constantine, erected in 312, the earliest instance of a building constructed with fragments of former edifices, 13.

**Arch**, pointed or Gothic. Its geometrical construction given in the writings of Euclid, 7, 92, 144. The church of the hospital of St. Cross at Winchester not the earliest instance of it, 10. It had before been used in the church of the abbey at Clugny, *ibid.* An instance of it in mosaic in the church of St. Agatha at Ravenna, built about 400, ninety-three years before the arrival of Theodoric king of the Goths in Italy, 33. This picture supposed of nearly the same time, 34. The pointed arch occurs on a coin of Charlemagne, representing the church at Aix-la-Chapelle, 61. The dome at Pisa an instance of the pointed arch prior to the crusades, 6, 89. Objections to early instances of the pointed arch, on the supposition that the structures have been rebuilt or altered, answered, 89. This kind of arch occurs much earlier than is ge-

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nerally imagined, 91. To be found in two specimens of mosaic in the fifth century, 92. See them represented, Plate III. Fig. 1 and 2. Pointed arches known and used in England in the time of Edward the Confessor, 116. They occur in a cellar under the old House of Lords, where the powder-plot was to have taken effect, *ibid.* Pointed arches in the dome of Sienna consecrated in 1180, 125, *n.* In the crypt of the church of St. Denis, *ibid.* In the church of La Charité sur Loire, *ibid.* At the east end of Canterbury cathedral, built between 1180 and 1185, *ibid.* In St. Germain des Prez, 125, *n.* 126, *n.* This latter erected at the beginning of the eleventh century, *ibid.* Towards the middle of the twelfth century the Lombard mode of architecture in France became intermixed with the new fashion of the pointed arch, 134. Pointed arch, its advantages over the semicircular, 145. Often occurs in Gothic buildings intermixed with the semicircular, and why, *ibid.* To be found in an oratory in the Vatican church, erected in the sixth century, 146, 242. See a copy of this, Plate III. Fig. 3. Mr. Knight's opinion as to its construction, 198. Refuted, 199. Gothic arches formed on correct geometrical principles, 200. Those in Westminster abbey are proofs of this, *ibid.* Variety of their proportions, 202.

*Arch*, straight. One consisting of straight sides and a pointed top, comprising two sides of a triangle, was in use in the ninth and tenth centuries, 91. Such an one occurs on the coins of Berengarius king of Italy, Louis the Pious, and some others, 91, *n.*

*Architects*, Constantine's, employed at Constantinople deficient in skill, 20. No names of any employed by him known, 25. Architects who built at Constantinople and elsewhere down to 527, 27 et seq. More than five hundred said to have been employed by Justinian, 29. But probably masons and all other workmen included in the number, *ibid.* Architects, Italian, employed by the Goths when settled in Italy, 33. Architects, Theodoric's, in no instance Goths, but Boetius, Symmachus, Cassiodorus, and Aloisius, 34. Early architects in France the monks themselves, 48. This not peculiar to France, *ibid. n.* Benedict Biscopius, about 675, procured architects from France, 54, 150. Wilfred bishop of York, about 674, procured architects from Rome, Italy, France, and other countries, 54. Naiton king of the Picts, in 710, sent to Ceolfrid abbot of Wermouth for architects, 56. In 1061 no other architects in Tuscany than some of the disciples of Buschetto, 97. Architects, Gothic, their sagacity and judgment in the instance of the clustered column, 103. Architect, the term little used in France in 1078, but the appellation of mason given to all who professed the art of building, 107. Edward the Confessor's architects believed to have been obtained from France, and especially from Normandy, 115. All our artists after the Conquest brought from Normandy, and loved to work in Caen stone, 116. Architects procured from Lombardy and Constantinople in 1178 to come to Venice, 131. Architects in Italy about 1216 had most of them some practice in sculpture, and affected to fill their buildings with it, 138. They seemed to



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THE END.



H. Inwood, del.

J. Smith, sculp.

*Nave of the Abbey Church of Clugny.*

London: Published by J. Taylor, High Holborn, Feb. 1. 1823.





Fig. 1

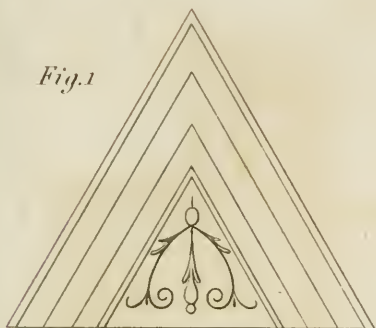


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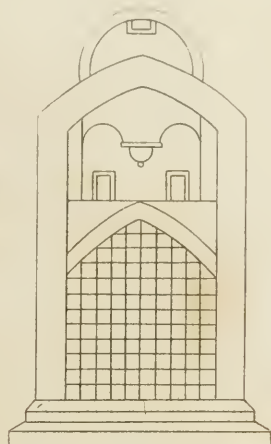


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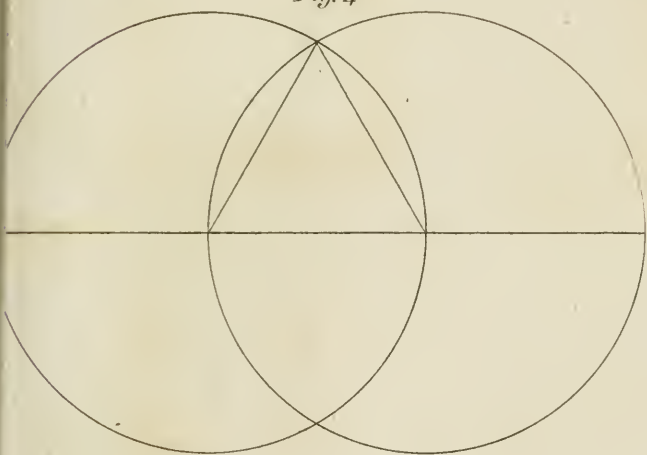


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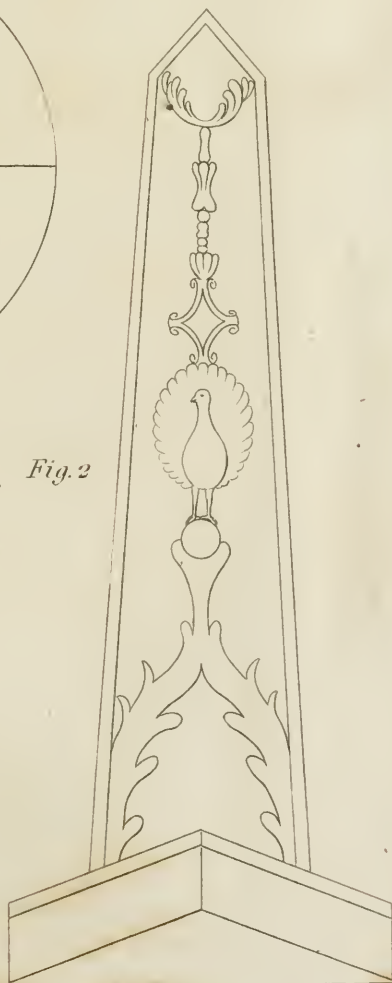
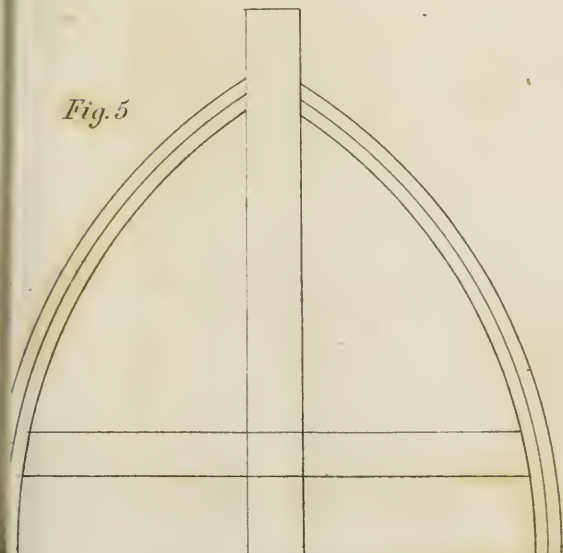
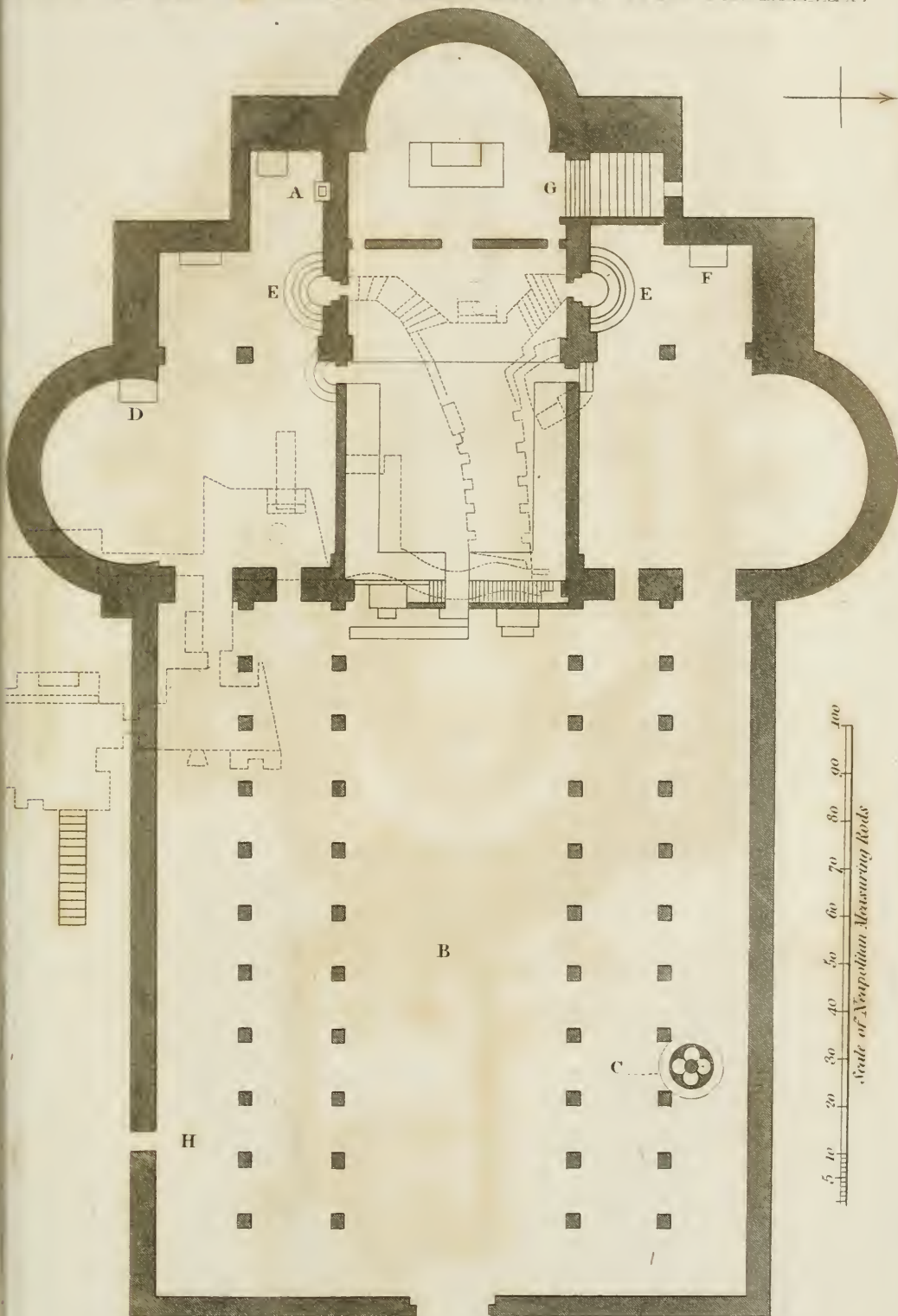


Fig. 5



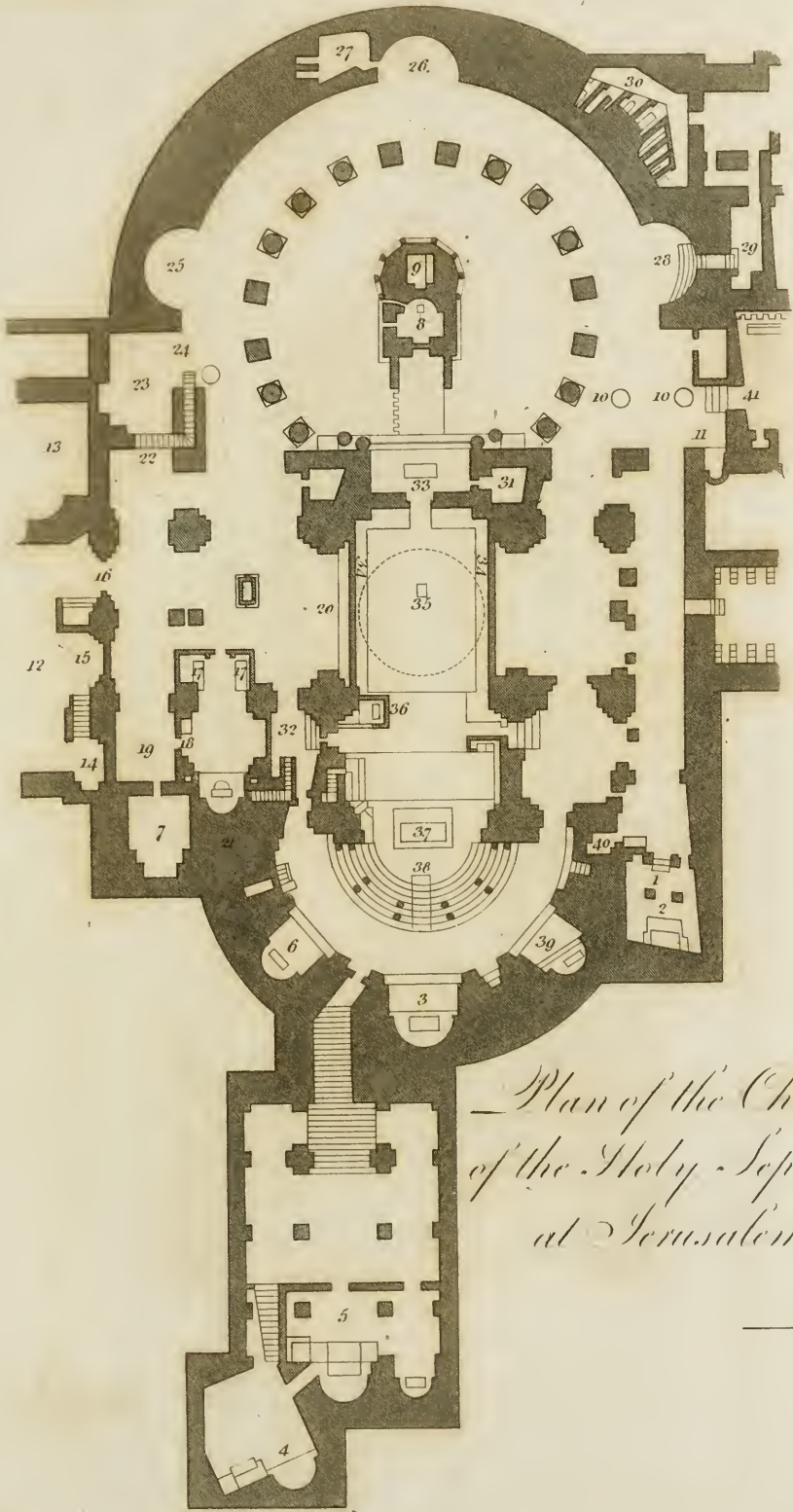


PLAN OF THE CHURCH OF THE NATIVITY AT BETHLEHEM.



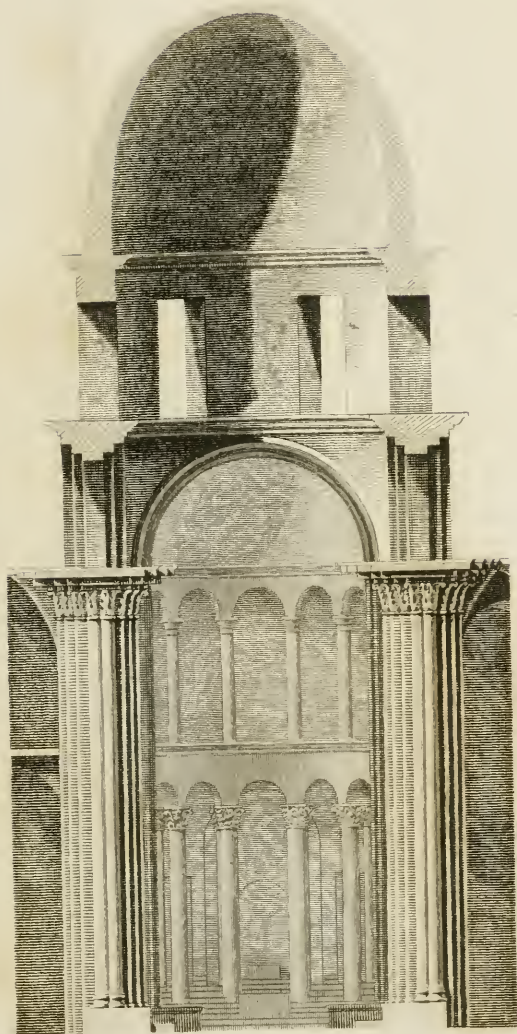






*Plan of the Church  
of the Holy Sepulchre  
at Jerusalem?*





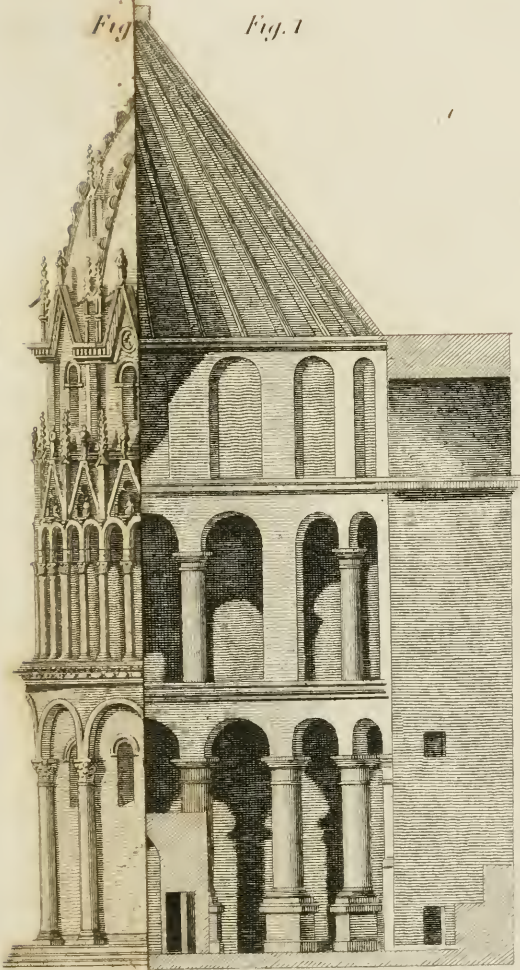
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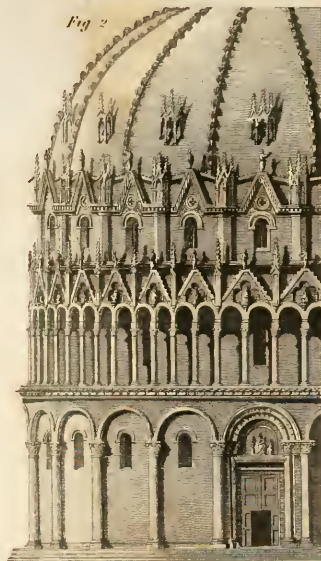
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*Fig. 1*



*Holy Sepulchre*

Fig 2

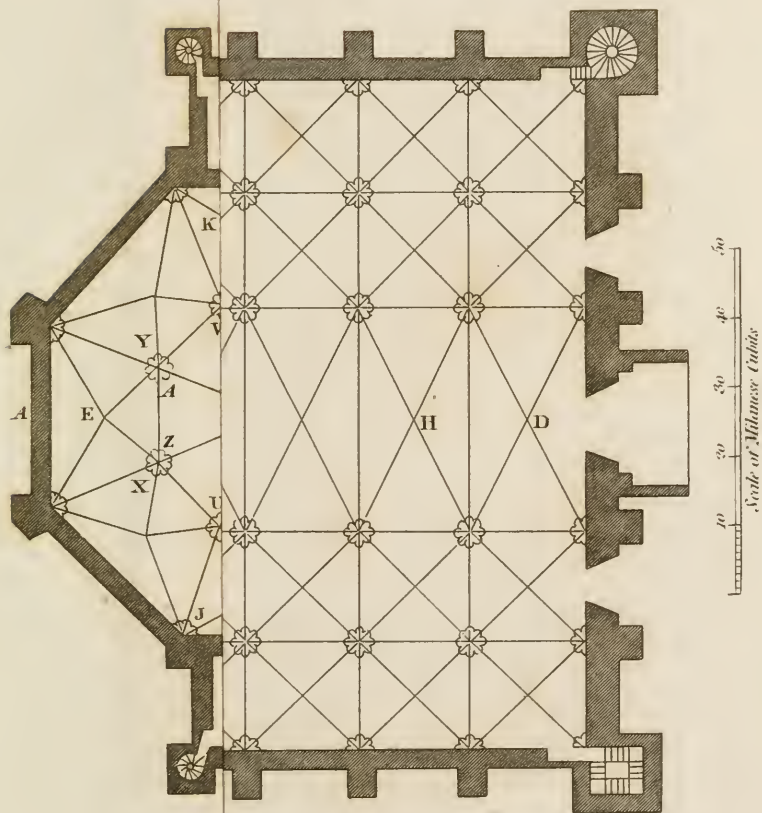


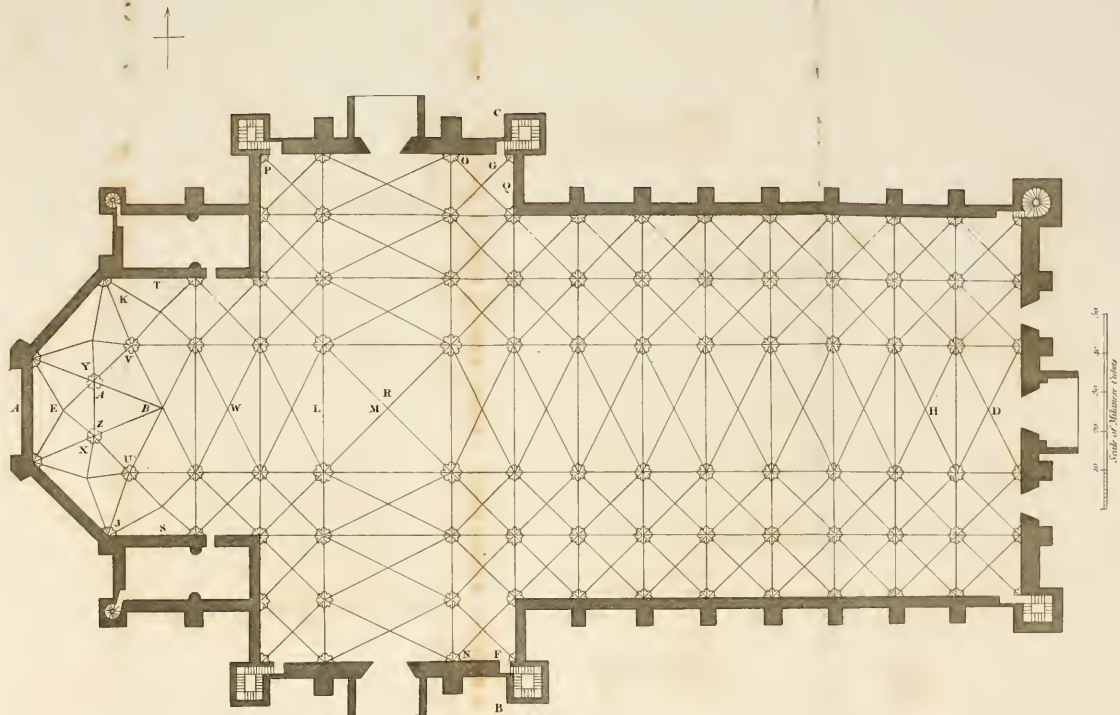
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Fig 1

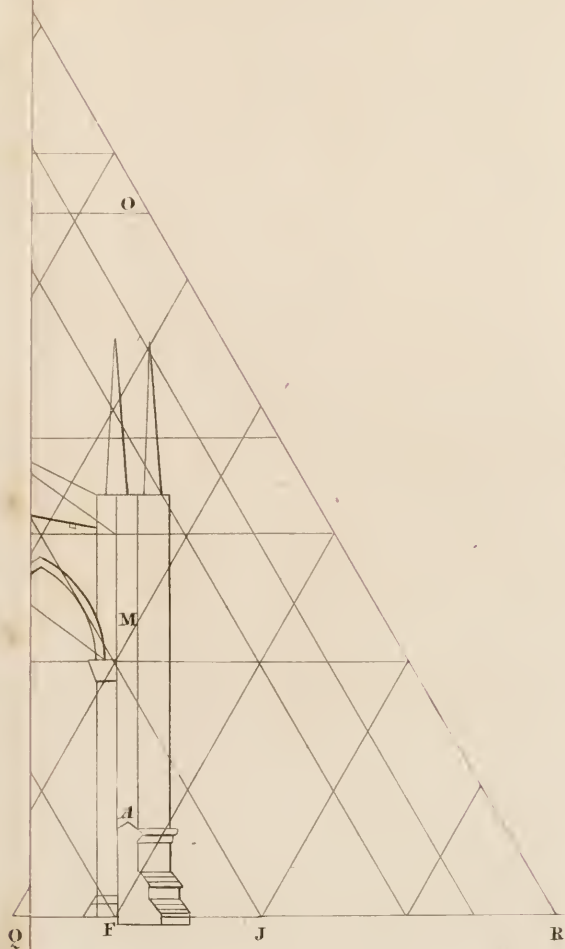


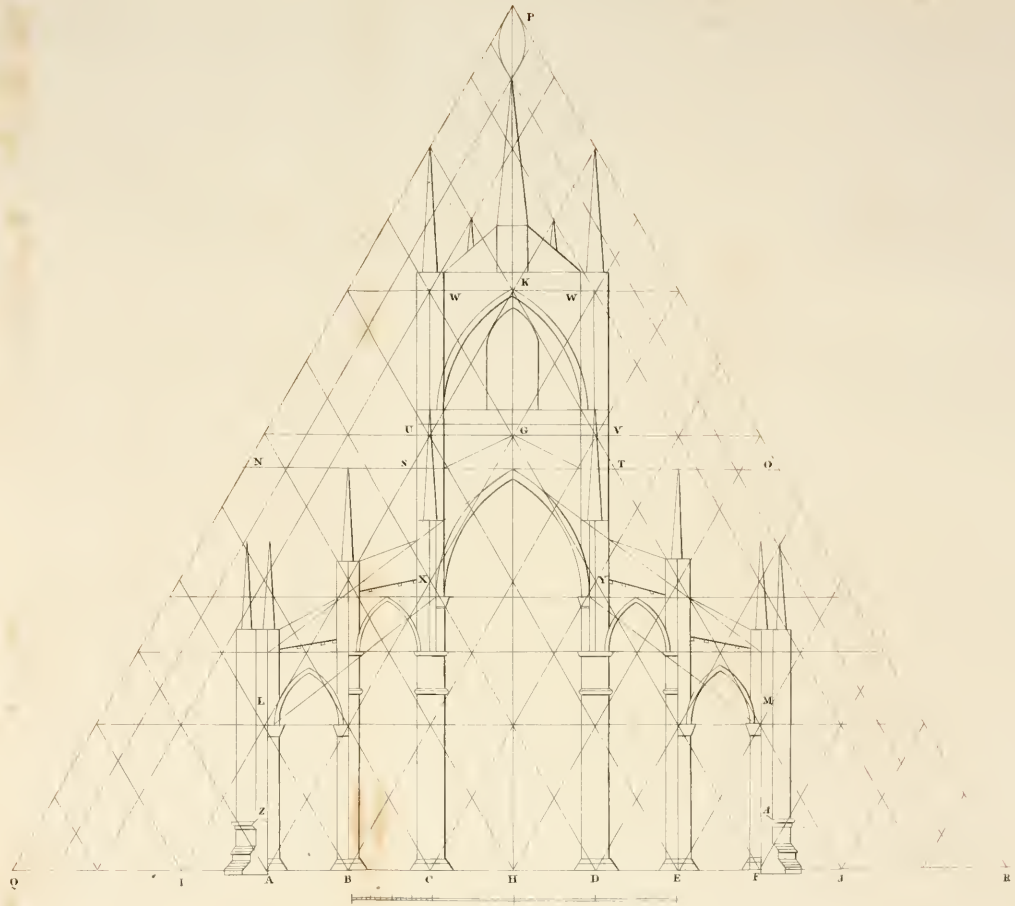
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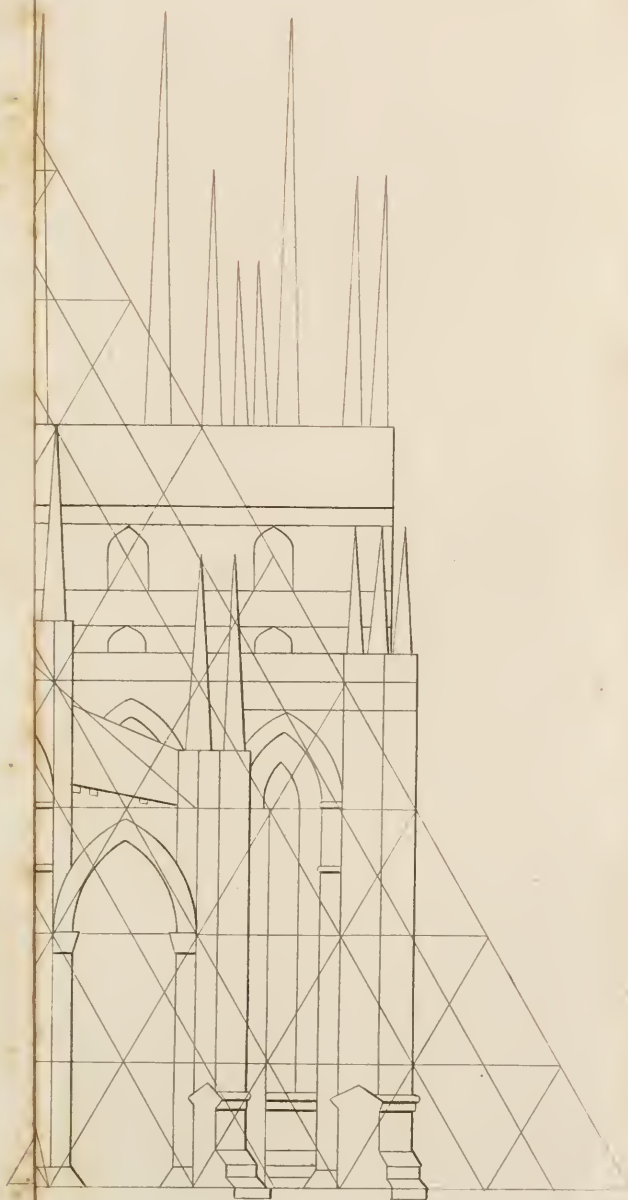






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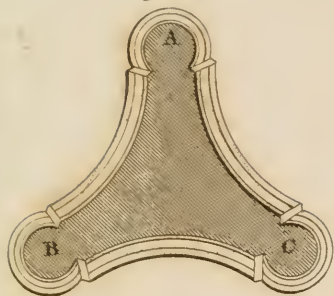


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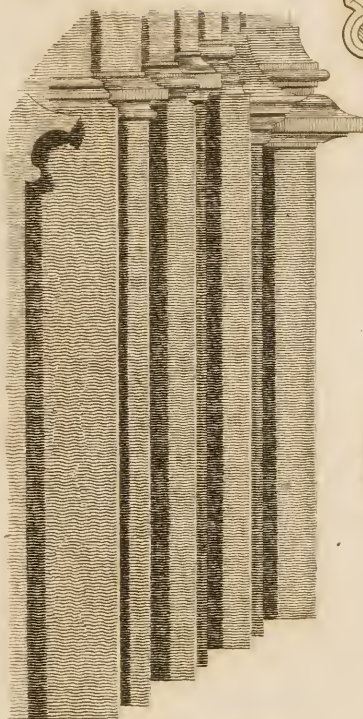
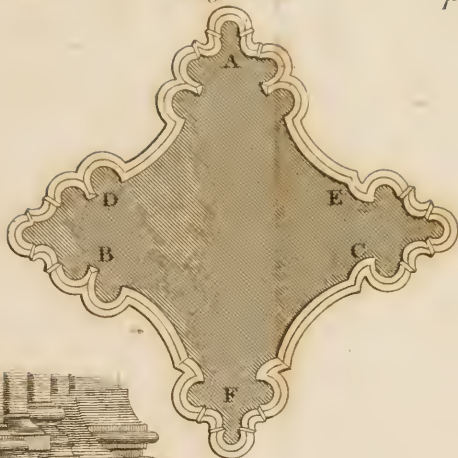


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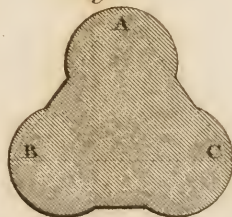


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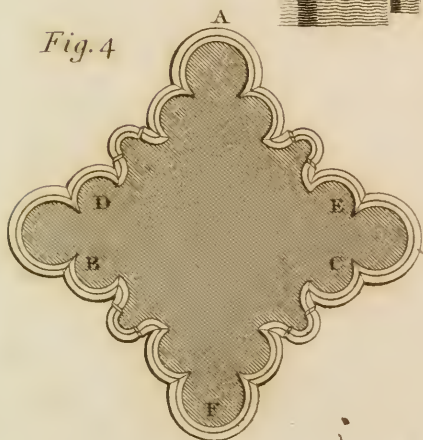


Fig. 5





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